



The Internet Tree

The State of Telecom Policy in Canada 3.0

Edited by Marita Moll and Leslie Regan Shade
Ottawa: Canadian Centre for Policy Alternatives



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Library and Archives Canada Cataloguing in Publication

The Internet tree : the state of telecom policy in Canada 3.0 / edited by Marita Moll and Leslie Regan Shade.

ISBN 978-1-926888-63-7

1. Telecommunication policy—Canada. I. Moll, Marita II. Shade, Leslie Regan, 1957—
III. Canadian Centre for Policy Alternatives

HE7815.I58 2011 384.0971 C2011-903147-7

Printed and bound in Canada.

Cover design by Chrys Moll. Photos from “Technically Beautiful” ‘found art’ collages and sculptures by Gerry Zypchen.



CCPA
CANADIAN CENTRE
for POLICY ALTERNATIVES
CENTRE CANADIEN
de POLITIQUES ALTERNATIVES

Canadian Centre for Policy Alternatives
Suite 205, 75 Albert Street, Ottawa, ON K1P 5E7
TEL 613 563-1341 FAX 613 233-1453
ccpa@policyalternatives.ca
<http://www.policyalternatives.ca>

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About the Authors

STEVE ANDERSON: National Co-ordinator, Open Media

MONICA L. AUER, M.A., LL.M.: Lawyer and researcher practising administrative law in Ottawa, Ontario

OLIVIER CHARBONNEAU: Associate Librarian, Concordia University

COMMUNAUTIQUE: Quebec community-based organization that connects communities and supports information literacy and citizen participation in the design and uses of information and communications technologies

MICHAEL FELCZAK: PhD student, Simon Fraser University (SFU) School of Communication

MICHAEL GEIST: Canada Research Chair in Internet and E-commerce Law, University of Ottawa

GEOFFREY GLASS: Ph.D. student, Simon Fraser University

GARTH GRAHAM: Telecom Researcher and Board Member, Telecommunities Canada

INTERNET RIGHTS AND PRINCIPLES DYNAMIC COALITION: An international multi-stakeholder coalition that provides a platform for the emergence of and agreement on definitions of internet rights. One of the goals is to achieve a more prominent position for rights in the Internet Governance Forum (IGF).

MICHAEL JANIGAN: Executive Director, Public Interest Advocacy Centre (PIAC), Ottawa

GRAHAM LONGFORD: Communications researcher and co-investigator with the Community Wireless Infrastructure Research Project

FENWICK MCKELVEY: PhD Candidate in the Communication & Culture program at Ryerson and York Universities

CATHERINE MIDDLETON: Canada Research Chair, Communication Technologies in the Information Society, Ryerson University

MARITA MOLL: CCPA Research Associate; Co-investigator, Canadian Research Alliance for Community Innovation and Networking; Board Member, Telecommunities Canada

CHRIS PARSONS: PhD Candidate, University of Victoria

LESLIE REGAN SHADE: Associate Professor at Concordia University in the Department of Communication Studies; Co-investigator, Canadian Research Alliance for Community Innovation and Networking; CCPA Research Associate; Board Member Open Media

RICHARD SMITH: Professor, School of Communication, Simon Fraser University and Director of the Centre for Policy Research on Science and Technology at SFU

VAL STEEVES: Associate Professor, Department of Criminology, University of Ottawa

DEBORAH STIENSTRA: Professor, Interdisciplinary MA Program in Disability Studies, University of Manitoba

ANNEMIJN VAN GORP: Post-doctoral Fellow, Ted Rogers School of Management, Ryerson University

DWAYNE WINSECK: Professor at the School of Journalism and Communication, with a cross-appointment to the Institute of Political Economy, Carleton University, Ottawa. Co-author of *Communication and Empire: Media, Markets and Globalization, 1860–1930* (2007, Duke University).

The Internet Tree

Preface

Marita Moll and Leslie Regan Shade

Canadians are creatively finding ways to access what has rapidly become an essential service for our everyday lives — whether for education, entertainment, edification, civic participation, commerce or access to government information. Less than 30 minutes from Parliament Hill in Ottawa, there is a peculiar tree on the banks of the Ottawa River. It has boxes, cables and antennae stuck to it. Nearby residents call it the internet tree and until very recently it was their only source of internet access. Although it might be unusual so close to a major urban area, such do-it-yourself internet access installations are not at all uncommon in some of the more remote areas, where local internet providers find innovative ways to pull 21st century communications through some very rugged terrain.

Our government, on the other hand, has been hiding behind the political equivalent of rocks and trees when it comes to developing a digital strategy that can unleash the social and economic potential of its citizens. Entering into the second decade of the new millennium, Canadian digital policy is in disarray. Studies by various international bodies show us rapidly sliding down the scale of connected nations. There have been consultations and hearings, most of which feature privileged industry players. While the issues are complex

and interconnected, Canadians, though rarely asked, have shown their interest and knowledge. But, amidst the highly anticipated announcement in Spring 2010 of a federal digital economy strategy by Industry Minister Tony Clement and a series of controversial, if not potentially rancorous, digital policy initiatives related to copyright, broadband as a basic service, internet traffic management practices, piracy, privacy, ‘lawful’ access and metered internet service, it is becoming clear that the federal government has no coherent plan. It is time to end this game of hide and seek.

As Ottawa prepares for a new government with the Conservatives as the majority party and the New Democrats as the official opposition, it is time to speak up, once again, for a digital economy strategy that is in the public interest. We note that, during the recent election, the Conservatives were the only political party which did not respond to OpenMedia.ca’s *Digital Future Survey*, save for one tweet from Tony Clement, while the NDP received top marks for their stance on issues including digital empowerment, internet transparency and choice, mobile diversity and regulatory reform. Working together to forge digital policy issues in the Canadian interest will be necessary.

To forward a vision for a Canadian digital future, this collection presents a public interest and community-centric vision of the digital economy. It is a call for a national digital strategy — a call that is eloquently addressed by Catherine Middleton in the opening article, an address to the Canadian Federation for Humanities and Social Sciences.

The Internet Tree is a collection that supports a digital economy strategy based on:

- openness
- broadband as an essential service
- community engagement and inclusion
- national sovereignty
- digital literacy programs

In the collection noted experts and public interest groups address structures of participation in policymaking, and specific policy is-

sues such as copyright, net neutrality, privacy, and security. The collection seeks to demystify some of the more arcane digital policy issues and make the technical minutiae of the infrastructure that we depend upon more comprehensible.

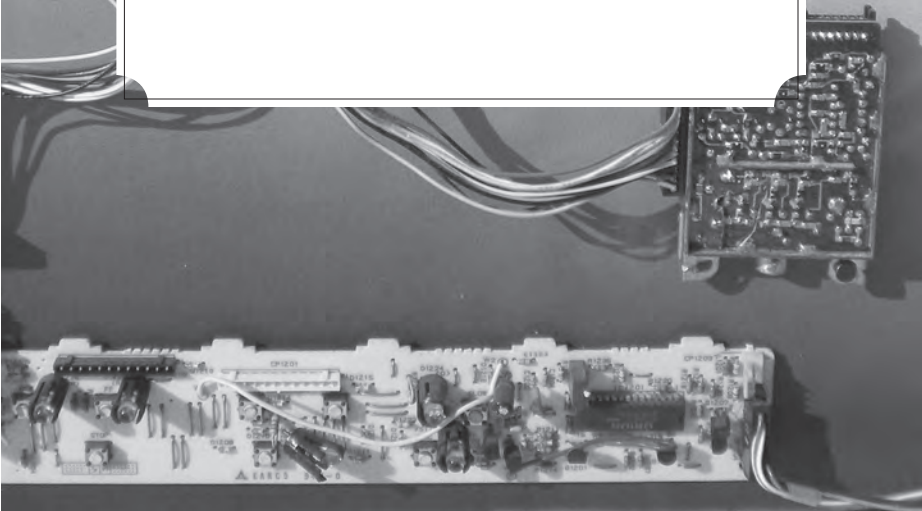
Canadians know that the resolution of these issues will dictate our telecommunications landscape for many years to come. They are deeply concerned about the lack of government accountability and transparency in the policy making process. In presenting these public interest perspectives of digital policy issues, we hope to support more sustained and robust structures of participation that would see Canadians have a broader impact on these crosscutting policy issues.

Marita Moll and Leslie Regan Shade

May 2011



The Big Picture



From Canada 2.0 to a Digital Nation

The Challenges of Creating a
Digital Society in Canada

Catherine Middleton

Canadian Federation for the Humanities and Social Sciences Big Thinking Lecture

Ottawa, October 7, 2010

Organized by the Canadian Federation for the Humanities and Social Sciences, the Big Thinking lecture series connects the federal parliamentary community and policy makers with leading researchers who bring forward new ideas, inspire change, and help advance society.

Let me begin with a story. Ten days before the 2010 Australian federal election, Opposition Leader Tony Abbott was interviewed on a current affairs show and asked about the opposition's plan to improve broadband access for Australians. This plan,

released the day of the interview, was quite different to the government's plan, and the reporter asked Abbott for some details. It quickly became evident that Abbott was unable to answer these questions, repeating several times that he wasn't a "tech head." After continuing to press Abbott for details, without success, the reporter then concluded "because you're not a tech head, you can't explain your policy to us...how you will use towers, how much fibre you would need, what spectrum you would use when we're told there is none to actually deliver your wireless technology".¹

These may sound like tech head details, and they are. But as the rest of this story shows, in this digital era politicians ignore technology at their peril.

Some of you know how this story ends. After the votes were counted, neither side had a clear majority, and negotiations to form a coalition began. More than two weeks passed while three independent MPs, all from rural Australia, consulted with their constituents as to which party to support. Finally, two of the three announced their decision to side with the Labor party, allowing it to remain in power. These decisions were complex and involved many factors, but broadband was a central one. As MP Tony Windsor said in announcing his decision to support the government, "You do it once, you do it right, and you do it with fibre. That has been one of the major influences that I've had in terms of making a decision."² The "it" he was referring to was extending broadband connectivity to his constituents, and he chose to support the party with an ambitious broadband development plan already underway.

I will return to Australia's broadband plan later in this talk. But first I hope I have convinced you that politicians and policy makers need to understand today's technologies and their impact in shaping digital societies.

Broadband networks are often described as the utility of the 21st century, as important as water and electricity. Broadband connectivity can — and I emphasize the word can — foster social and economic development, in three main areas. First, broadband connectivity enables individual citizens to access an enormous range of services and content. Second, it allows service delivery to communities. And third, it supports and enables other infrastructures that are essen-

tial to our economy, for instance transportation systems or energy management, including smart grids.

I will focus on broadband use by individual citizens. I have deliberately chosen the word citizen here, not consumer, as the benefits of broadband should not be restricted to the commercial arena.

Canada was a leader in encouraging its citizens to use the internet and broadband technologies. In 1997, Canada was the only country in the OECD with a measurable uptake of broadband connectivity by its citizens. Canadians had the highest broadband uptake in the OECD until the year 2000. As of December 2009, Canada ranked 9th in the OECD in broadband uptake with 30.5 subscriptions per 100 inhabitants, up marginally from the 10th place we had occupied for the past couple of years.³

The OECD data can be somewhat confusing, as it measures broadband uptake in terms of subscribers per 100 inhabitants in a country. But the data is widely cited, and often used by governments to justify investment in broadband infrastructure, or to highlight increases in broadband uptake within a country.

Both the CRTC and Statistics Canada report broadband uptake rates in terms of percentage of households with broadband connections, a figure that is much easier to make sense of. The most recent statistic comes from the CRTC's 2010 Communication Monitoring Report.

To this point, I haven't provided a definition of broadband. What we might call 'first generation broadband' can be thought of as internet connectivity that is faster than dial up. As anyone who has used dial up can attest, being 'faster than dial up' is not a terribly high hurdle to clear. The CRTC reports that 72% of Canadian households had 'faster than dial up' connections in 2009, but just over 60% were subscribing to broadband services at speeds greater than 1.5 Mbps (megabits per second).⁴ This is the speed that the Federal Government has defined as being the minimum speed for broadband connections, and the projects it funds must offer at least this speed.⁵

I will discuss 'next generation' broadband speeds in more detail in a few minutes, but want to note here that 1.5 Megabits per second is not very fast. In some Canadian cities internet service providers have been offering speeds of up to 50 Mbps for some time, and now

you can even get a connection offering up to 120 Mbps, potentially 80 times faster than the minimum speed.

Remember that broadband connectivity is thought to be central to encouraging the development of a digital society. My view of a digital society is one in which all Canadians have the necessary skills and technologies to use our broadband connections to access information, to engage with each other in debate and discussion, to access government, business and community services, and to connect with anyone, anywhere for whatever purposes we desire. Canadians will engage in a digital society if it offers benefits to them, and if they have the resources and capacity to do so.

It is up to policy makers to ensure that our digital society is accessible by all, and that no one is excluded. There is still a digital divide in Canada, that is a gap between those who are already engaging in our digital society in some way, and those who are not. Among those who are not engaged are older Canadians, those in lower income brackets, and those with less formal education or low literacy levels.⁶ These basic demographic characteristics are well-understood, and need to be addressed by policy makers if all Canadians are to experience the benefits of a digital society.

There are very real problems in getting access to broadband connectivity in rural and remote areas. On this point, some of you will remember the outcry in March of this year when funding was cut to the Community Access Program, a program that provides much needed connectivity in underserved sites across the country. Fortunately, funding has been restored, at least temporarily.

Approximately 95% of Canadian households are served by at least one broadband provider.⁷ As noted though, fewer than two-thirds of Canadian households actually have a broadband subscription, meaning that many households that could get a broadband connection choose not to do so. Statistics Canada's 2009 Canadian Internet Use Survey offers some insights on this point. It notes that 80% of adult Canadians have used the internet for personal purposes in the past year. Of the non-users, 37% say that they have no interest in the internet, and only 7% note cost as a reason for not being online.⁸

There is certainly a challenge in encouraging non-users to join us online, and no one should be coerced to participate in a digital so-

ciety. A real concern however is that by not participating in a digital society, individuals may become disenfranchised. Think of the migration of government information, of services, and forms onto the internet. What are your departments, your constituency offices doing to ensure that this information remains accessible to *all* Canadians, even those who are uncertain about going online, or unable to do so?

I'm guessing that there are people in this audience who have at least three devices with them, right now, that they could use to access the internet. But I'm guessing that there are also people in this audience who are like Australian opposition leader Tony Abbott — not tech heads. Some of you act as the tech support person for your extended family and circle of friends. Others call on children or younger colleagues for assistance in figuring out things like how to get music onto an MP3 player, how to find that photo that someone posted on Facebook, or how to check whether someone is talking about you on Twitter.

We don't have good measures of what it takes for individuals to be truly at ease in a digital society. My research has been exploring this issue, trying to figure out how engaged Canadians really are with the internet as a way of understanding our progress toward a digital society. Let me share some of the findings.

We know that 80% of Canadians have used the internet in the past year. This is certainly a good indicator that many Canadians have embraced the online environment. 96% of these Canadians used the internet from home, and of these about three-quarters use the internet daily. To keep the math simple, I will present data in terms of the overall adult Canadian population. Doing this, we find that about 60% of all adult Canadians go online daily, meaning of course that 40% don't. This is quite a large number, and one that must be kept in mind when developing online services.

Additionally, only 42% of adult Canadians spend 5 or more hours online per week. This data is from a year ago, and the Statistics Canada survey that is underway now will likely show an increase in this number. But it does suggest that although Canadians are using the internet, not everyone is a heavy user.

Looking at what Canadians do online, we find that more than 70% of adult Canadians have used email from home in the past year. This

is the most popular online activity. About 60% of Canadians use the internet for general browsing for fun or leisure. More than half of us have paid a bill or done some banking online in the past year. About a quarter of us watched some TV or downloaded movies online. But only 20% reported that they had used the internet to communicate with government, the same number that reported contributing content (for instance uploading photos or writing a blog).

What can we conclude from this information? Are Canadians well-prepared to engage with each other online, to conduct business transactions and to access government services? The answer, unfortunately, is that we don't really know. What I believe the Statistics Canada data suggests though is that while Canadians are enthusiastic internet users, many of us are not yet particularly sophisticated in what we do online.

There are of course demographic differences in our internet usage patterns. I won't go into these other than to say that younger users spend more time — and do more things — online. Some observers note that we don't really have to worry about the fact that many Canadians don't use the internet extensively because they're old and they'll die soon and the problem will go away. The net generation will know how to do everything online, and they'll just cruise into digital society. But as someone who is not a member of the net generation, let me remind everyone that it will be a long time before we all die off. And by the time we do, today's net generation will be the older members of our digital society, facing tomorrow's equivalent of trying to figure out exactly how Facebook works or how to connect the computer to the TV to watch movies, while their digitally savvy kids look on in dismay.

Coming back to the question of a digital society for Canadians, there is much to be done before we will all be comfortable in an online environment. There is no point in encouraging citizens to go online simply because it satisfies a policy goal of expanding broadband uptake. Instead, citizens should be motivated to join the digital society because of real benefits that it can offer to them, improving their quality of life, and making it easier, more effective or simply better to engage with government, business and other citizens.

Digital society and the development and usage of broadband networks are tightly linked. Broadband is the enabler of digital societ-

ies, but networks alone are not enough. In order for citizens — and countries — to truly benefit from investment in broadband infrastructure, attention must be paid to the development of services that take advantage of this broadband connectivity. Public sector investment in broadband networks is frequently justified by statements about the benefits that can accrue from wide scale adoption of e-health, e-learning, e-commerce, and e-government services. This is likely the case, but to date, here in Canada and elsewhere around the world, very few of these applications are actually in use. There is a big gap between the rhetoric of the benefits of broadband connectivity, and the availability of applications that would actually enable ordinary citizens to fully engage in the digital society in ways that have a meaningful impact.

Discussions of broadband-enabled digital societies assume that high quality, affordable broadband connectivity is available to all. In 2001, Canada's National Broadband Taskforce⁹ concluded that "Canada must seize the opportunities presented by the broadband revolution and that all Canadians should reap the benefits of high-speed Internet access." The taskforce, which was chaired by our new Governor General, David Johnston, noted that broadband speeds should be sufficient to support real-time video interaction, and recommended that a minimum speed of 1.5 Mbps — symmetrical — would be required. Almost ten years later, the same minimum speed is being applied to define broadband connectivity in Canada, and the recommendation for symmetrical speed — that is equal capacity to upload information as well as download it — is no longer in place.¹⁰

The rest of the world has not stood still. In Hong Kong, Japan, Singapore and assorted other locations, including Chattanooga, Tennessee, gigabit broadband connectivity (1000 Mbps) is available, offering network speeds more than 600 times faster than our current broadband standard. Broadband networks being built in Australia and Korea will offer gigabit capacity in the next couple of years. The U.S. has a slightly less ambitious target, aiming to connect at least 100 million American homes to 100 megabit per second service over the next ten years.¹¹

While there are few applications that can take advantage of these speeds right now, and very limited demand for the service, gigabit

connectivity signals the future direction of digital societies. Gigabit connectivity is bold and ambitious, and significant network innovation and investment is needed to make it happen. There are certainly serious debates as to whether this sort of network capacity and speed are really needed.

Believers in what might be called ‘big broadband’, broadband that can have a transformative impact, argue that this is the way of the future. A 2009 OECD report¹² estimated that investment in this sort of broadband connectivity, delivered using fibre to the home, could pay for itself in ten years. This conclusion was based on achieving savings in the electricity, health, transportation and education sectors, as a result of using the broadband network for service provision.

So the challenge facing Canada, and other countries, is how to transition from ‘first generation’ broadband connectivity to the ‘next generation’ broadband that will enable social and economic benefits. There are lessons to be learned from other countries, but each country is unique and plans are not entirely replicable.

What is common to many broadband plans however is a vision of a national broadband network, or networks, accessible to all service providers and offering a common platform for innovation and service delivery. The Alberta SuperNet is a working model of this approach. Although it does not provide connectivity directly to citizens in their homes, the SuperNet connects thousands of government offices, and provides services to 429 communities. Any agency or service provider can contract with the network operator to provide services to anyone on the network, for a uniform price across the province.¹³

In Singapore, the government has invested in a public-private partnership that is bringing gigabit broadband to all premises in the country.¹⁴ As with the Alberta SuperNet, any service provider can use this network to reach any premise. Singapore is a very small country, but a similar approach is also underway in Australia, a country far more comparable to Canada in terms of geography and population density. The Australian National Broadband Network, initiated by the Kevin Rudd Labor government and continued by Julia Gillard’s recently elected government, will build a single wired broadband network to serve 93% of premises. The remaining 7% of premises will have access to wireless or satellite broadband.¹⁵

These networks are still works in progress, and there are many challenges inherent in building them. What we do see internationally though is a strong commitment to building broadband infrastructure that will meet the needs of citizens, offering affordable, high quality network access that can be used by all. Governments, businesses and communities are becoming engaged in developing applications and services that really will make a difference for citizens, realizing the promise of a digital society.

There is much work to be done in Canada. We have high broadband adoption rates, but usage data suggests that the internet is not yet central to the daily lives of many Canadians. However, any efforts to encourage more extensive uptake of broadband networks must be built on an understanding of real benefits that broadband can provide. There are many successful programs that help individuals gain confidence in the use of computers and broadband networks, and these should be continued. We must also continue to measure our broadband usage, and the impacts of broadband use, with stable funding provided to Statistics Canada for the Canadian Internet Use Survey.

Efforts must be made to develop applications that do make good use of broadband connectivity. The objective is not to develop applications to justify broadband deployment, but to take advantage of the convenience, speed, and communication possibilities offered by broadband to provide better services to citizens. Innovation should be fostered across society, with all interested parties encouraged to develop new broadband applications and services to meet the needs of Canadians.

A bold vision is required to enable the transition from first generation to next generation broadband networks. It is unlikely that a single national broadband network will be proposed for Canada, so the challenge for the Federal Government, the provinces, the CRTC and service providers is to develop models that will result in affordable, high quality, next generation broadband services that are accessible to all. This model must be developed in consultation with the network's users, us, the citizens of Canada.

To realize a broadband-enabled digital society in Canada we need engaged, informed and digitally literate citizens; useful applications and services that offer real value, providing services in more

innovative, more convenient, more affordable and more accessible ways; and a world-class broadband network infrastructure that connects all Canadians and allows any interested party to provide service to any other.

Achieving these outcomes requires vision, commitment and planning. The potential benefits of a broadband-enabled digital society are enormous, and it is up to Canadians to ensure that we have what is needed for us to become digital citizens.

Thank you.

Catherine Middleton holds the Canada Research Chair in Communication Technologies in the Information Society at the Ted Rogers School of Management, Ryerson University. Her research focuses on the development and use of broadband and mobile infrastructures. Links to her research projects can be found at <http://www.broadbandresearch.ca>.

For more information on the Big Thinking lecture, please call 613.238.6112 ext. 351 or visit www.fedcan.ca.

Acknowledgements

I thank the Canadian Federation for the Humanities and Social Sciences for inviting me to give this talk, and Ryerson University, the Canada Research Chairs program, SSHRC and Infrastructure Canada for supporting the research discussed.

Notes

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*Towards a National
Digital Strategy
for the Public Interest*

*People of our country
of our country
only sustain it
we should all take a special role in responsibility*

KEN DANBY Artist

*Wild beauty is the envy of the world, and a
pride about the place we call home. It's one of the
things we have to protect for this and future generations.*

Premier MIKE HARRIS

Ten Internet Rights & Principles

Internet Rights and Principles Dynamic Coalition

This document defines ten key rights and principles that must form the basis of internet governance. They have been compiled by the Internet Rights and Principles Dynamic Coalition (IRP), an open network of individuals and organisations working to uphold human rights in the Internet environment. The principles are rooted in international human rights standards, and derive from the coalition's emerging Charter of Human Rights and Principles for the Internet.

The internet offers unprecedented opportunities for the realization of human rights, and plays an increasingly important role in our everyday lives. It is therefore essential that all actors, both public and private, respect and protect human rights on the internet. Steps must also be taken to ensure that the internet operates and evolves in ways that fulfill human rights to the greatest extent possible. To help realize this vision of a rights-based internet environment, the 10 Rights and Principles are:

1) Universality and Equality

All humans are born free and equal in dignity and rights, which must be respected, protected and fulfilled in the online environment.

2) Rights and Social Justice

The internet is a space for the promotion, protection and fulfilment of human rights and the advancement of social justice. Everyone has the duty to respect the human rights of all others in the online environment.

3) Accessibility

Everyone has an equal right to access and use a secure and open internet.

4) Expression and Association

Everyone has the right to seek, receive, and impart information freely on the internet without censorship or other interference. Everyone also has the right to associate freely through and on the internet, for social, political, cultural or other purposes.

5) Privacy and Data Protection

Everyone has the right to privacy online. This includes freedom from surveillance, the right to use encryption, and the right to online anonymity. Everyone also has the right to data protection, including control over personal data collection, retention, processing, disposal and disclosure.

6) Life, Liberty and Security

The rights to life, liberty, and security must be respected, protected and fulfilled online. These rights must not be infringed upon, or used to infringe other rights, in the online environment.

7) Diversity

Cultural and linguistic diversity on the internet must be promoted, and technical and policy innovation should be encouraged to facilitate plurality of expression.

8) Network Equality

Everyone shall have universal and open access to the internet's content, free from discriminatory prioritisation, filtering or traffic control on commercial, political or other grounds.

9) Standards and Regulation

The internet's architecture, communication systems, and document and data formats shall be based on open standards that ensure complete interoperability, inclusion and equal opportunity for all.

10) Governance

Human rights and social justice must form the legal and normative foundations upon which the internet operates and is governed. This shall happen in a transparent and multilateral manner, based on principles of openness, inclusive participation and accountability.

Get involved with developing the IRP Charter at www.irpcharter.org, follow us at @netrights on Twitter or join the Internet Rights and Principles Facebook group.

Internet Rights & Principles Coalition

Canada's Digital Economy Strategy

An Openness Framework

Michael Geist^t

In May 2010, Industry Minister Tony Clement unveiled the Canadian government's much-anticipated Digital Economy Strategy consultation.² The consultation ran for two months and included an online forum, face-to-face meetings, and a 40-page document that sets out key areas of concern.³ Five areas for discussion were identified: capacity to innovate, building a world-class digital infrastructure, growing the ICT industry, creating digital content, and building digital skills.

Some skeptics argued that the consultation was long overdue or perhaps even came too late. Canada has inarguably lost considerable ground in comparison with many other countries around the world that were quicker to identify and implement digital strategies.

While the delays have been marked by a gradual hollowing-out of the Canadian tech sector and sliding global rankings on network and wireless connectivity,⁴ Clement has firmly established himself as the most committed Industry Minister on digital issues since John Manley in the late 1990s.

Prioritizing digital issues is a first step toward remedying the situation, but a decade worth of policy neglect will not be solved overnight. Canada needs a digital strategy that borrows from the best the rest of the world has to offer and contextualizes those policies for the Canadian market and legal frameworks.

General issues: Who leads, who pays, what principles?

The consultation identified very specific areas for discussion including digital technologies, building a digital infrastructure, growing the ICT industry, digital content, and digital skills. My complete submission, which is available at <http://www.michaelgeist.ca/content/view/5193/125/>, provides specific recommendations on many of these issues. This article addresses several general issues that are critically important to a successful digital economy strategy that do not easily slot within the consultation's pre-defined categories.

i. Who leads the digital economy strategy?

The starting point for any digital economy strategy is leadership. Canada needs digital leaders, including a Chief Technology Officer and cabinet-level attention to the issue. The not-so-secret reality of the Industry Minister portfolio is that it is simply far too large to give all the issues under its mandate the necessary attention. Manufacturing, automotive, telecom, foreign investment, competition, consumer affairs, Statistics Canada, intellectual property, scientific research and dozens of other issues all fall under the same umbrella.

While this was the intention in the early 1990s when Industry Canada was formed as a "super Ministry" that merged Consumer and Corporate Affairs with Communications, this experiment has failed. With so many issues demanding attention, it should come as little surprise that many issues either fall under the radar screen or take months to be addressed.

Industry Minister Clement remains the obvious point person for digital strategy leadership, yet the consultation document demonstrates that the issue is not so clear cut. Canadian Heritage Minister James Moore and Minister of Human Resources and Skills Development Diane Finley both contributed to the document, leading to

different points of emphasis among the chapters.⁵ Moreover, many other ministers — including public safety, health, the environment, trade, and finance — could reasonably argue for a role in the process.

Given the broad scope of digital issues, Canada needs a single point of leadership with the ability to advance the strategy at the cabinet table and to cut across sectors. Many of our trading partners have created ministerial positions (or at least junior ministers) with responsibility for specific digital issues. For example, Australia has both a Minister for Innovation, Industry, Science and Research and a Minister for Broadband, Communications and the Digital Economy.⁶

If Minister Clement is to lead, he needs clear responsibility and a mandate on the issue, not the prospect of cobbling together support from cabinet colleagues zealously guarding their turf after Canadians have spoken.

ii. Who pays for the digital economy strategy?

Even with leadership addressed, a successful national digital strategy requires funding. The question of how the strategy will be paid for is omitted from the consultation but represents a basic pre-requisite. While not all aspects of the strategy will require significant investments — many policy solutions involve minimal government expenditures — developing digital skills training programs, ensuring broadband access for all Canadian communities, and fostering the creation and promotion of Canadian new media are just some of the objectives that come with a price tag attached.

The most obvious source of funds comes from the consultation itself. The digital television transition, which seems to have stalled in recent months but is still nominally set for August 2011,⁷ should lead to spectrum re-allocation and auction. The transition holds the dual promise of injecting new competition into the wireless sector and filling government coffers with billions in new revenue.⁸ Those billions should be earmarked for the digital economy strategy, effectively enabling the strategy to pay for itself.

iii. What guiding principle for the digital economy strategy?

I believe the government should adopt the principle of “openness” as the guiding principle for its digital economy strategy. In recent years, an open approach has found increasing favour for a broad range of technology policy issues and has been incorporated into many strategy documents. For example, New Zealand identified “openness is a central principle of [its] Digital Strategy 2.0.”⁹

The Canadian consultation document includes a brief reference to open access for government-funded research,¹⁰ but it seemingly ignores the broader potential for a strategy with openness policies as a key foundational principle.

Where might an openness principle make sense?

First, open government policies, including the use of the internet to increase transparency and the adoption of open licences to government content to make it more readily usable and accessible. Canadian municipalities such as Vancouver,¹¹ Edmonton,¹² Toronto,¹³ and Ottawa¹⁴ have provided leadership in this area in recent months and the federal government could use the digital strategy process to follow their example by committing to an open access approach to government data.

Second, open access to publicly-funded research could be mandated throughout the major federal granting agencies. Many countries have implemented legislative mandates that require researchers who accept public grants to make their published research results freely available online within a reasonable time period.¹⁵ Canada has emphasized research funding by committing millions to attracting some of the world’s leading researchers, yet it has lagged on open access and the digital strategy provides an ideal opportunity to catch-up.

Third, the strategy could enhance support for open source software, with a clear government mandate to level the playing field between proprietary and open source software. In early 2010, a Quebec court ruled that the provincial government violated the law when it purchased software from Microsoft without considering offers from other vendors.¹⁶ The federal government has some policies on point,

but more can be done to encourage open source software adoption for the benefit of taxpayers and technological development in Canada.

Fourth, network open access requirements mandating certain openness standards in the use of the spectrum that is crucial for wireless telecommunications. For consumers tired of the “walled garden” approach of some providers that use both contracts and technology to lock-in consumers, open spectrum policies would spur new innovation and heightened competition by facilitating greater consumer mobility and promote the introduction of new services not tied to a single wireless provider.¹⁷

Fifth, open spectrum that reserves some of the spectrum scheduled for auction for unlicensed uses.¹⁸ While there is great potential to use auction proceeds to fund some digital strategy initiatives such as rural broadband deployment, reserving some of that spectrum for open purposes — much like wifi — should be another piece of the puzzle.¹⁹

Sixth, an open investment policy that tears down some of the barriers to foreign participation in the Canadian digital marketplace. While reducing restrictions is viewed by some groups as a threat to Canadian cultural policy, there should be ways to craft rules that open the door to new foreign participants but maintain many long-standing cultural policies.

Editor’s note: At the time of publication, then Industry Minister Tony Clement was shuffled to Treasury Board and Quebec MP Christian Paradis was appointed new Industry Minister. Observers noted that this would probably mean a delay in any release of a digital economy strategy but not a shift in general government policy on these issues.

Michael Geist is Canada Research Chair in Internet and E-commerce Law, University of Ottawa, Faculty of Law. An earlier version of this article was submitted to Industry Canada as part of its consultation on a digital economy strategy.

Notes

1. My thanks to Peter Waldkirch for his invaluable assistance.
2. Government of Canada, “Digital Economy Consultation”, online: Government of Canada <<http://de-en.gc.ca/home/>>.
3. Government of Canada, *Improving Canada’s Digital Advantage: Strategies for Sustainable Prosperity* (Consultation Paper on a Digital Economy Strategy for Canada) (Ottawa: Public Works and Government Services Canada, 2010), online: Government of Canada <http://de-en.gc.ca/wp-content/uploads/2010/05/Consultation_Paper.pdf>.
4. “OECD Broadband Portal”, online: Organisation for Economic Co-operation and Development <http://www.oecd.org/document/54/0,3343,en_2649_34225_38690102_1_1_1_1,00.html>; Michael Geist, “OECD Report Finds Canadian Broadband Slow, Expensive”, online: Michael Geist’s Blog <<http://www.michaelgeist.ca/content/view/4019/135/>>.
5. *Supra* note 2 at 3, 5, 7 (introductory comments by the Minister of Industry, Minister of Human Resources and Skill Development, and Minister of Canadian Heritage and Official languages, respectively).
6. Australian Government Department of Innovation, Industry, Science and Research, “Welcome to Innovation.gov.au”, online: Department of Innovation, Industry, Science and Research <<http://www.innovation.gov.au/Pages/default.aspx>>; Australian Government Department of Broadband, Communications and the Digital Economy, “About Us”, online: Department of Broadband, Communications and the Digital Economy <http://www.dbcde.gov.au/about_us>.
7. See e.g. “‘Crisis Looms in Digital TV Transition’ – CRTC Chairman” *Broadcaster: Canada’s Communications Magazine* (15 June 2010), online: Broadcaster <<http://www.broadcastermagazine.com/issues/story.aspx?aid=1000374505>>.
8. The recent auction of the AWS spectrum raised over \$4 billion in revenue for the government; see Industry Canada, “Auction of Spectrum Licenses for Advanced Wireless Services and Other Spectrum in the 2 GHz Range”, online: Industry Canada <http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/h_sfo8891.html>.
9. N.Z., “The Digital Strategy 2.0”, August 2008, online: Government of New Zealand <<http://www.digitalstrategy.govt.nz/upload/Documents/Digital%20Strategy%202.0%20FINAL.pdf>> at 8.
10. *Supra* note 2 at 14.
11. City of Vancouver Open Data Catalogue, online: City of Vancouver <<http://data.vancouver.ca/>>.

12. City of Edmonton Open Data Catalogue, online: City of Edmonton <<http://data.edmonton.ca/>>.
13. City of Toronto Official Data Set Catalogue, online: City of Toronto <<http://www.toronto.ca/open/>>.
14. City of Ottawa Open Data Beta, online: City of Ottawa <http://www.ottawa.ca/online_services/opendata/index_en.html>; Open Data Ottawa, online: Open Data Ottawa <<http://opendataottawa.ca/>>.
15. For example, grant recipients working in certain areas under the European Commission's Seventh Framework Programme (FP7) must comply with open access policies. See European Commission, Press Release IP/08/1262, "Better access to scientific articles on EU-funded research: European Commission launches online pilot project", online: Europa <<http://europa.eu/rapid/press-ReleasesAction.do?reference=IP/08/1262&format=HTML&aged=0&language=EN&guiLanguage=en>>. In the U.S., several research funding agencies have instituted open access conditions, notably the National Institute of Health; see National Institute of Health Public Access, online: <<http://publicaccess.nih.gov/>>; Peter Suber, "An open access mandate for the National Institute of Health" (2008) 2:2 *Open Medicine*, online: *OpenMedicine* <<http://www.openmedicine.ca/article/view/213/135>>. Furthermore, on April 15 2010 a bipartisan effort introduced the Federal Research Public Access Act: U.S., Bill H.R. 5037, *Federal Research Public Access Act*, 111th Cong., 2010); see Peter Suber, "FRPAA Introduced in the U.S. House of Representatives", *SPARC Open Access Newsletter* 145 (May 2 2010), online: *SPARC Open Access Newsletter* <<http://www.earlham.edu/~peters/fos/newsletter/05-02-10.htm#frpaa>>.
16. *Savoir-faire Linux inc. c. Régie des rentes du Québec*, 2010 QCCS 2375, 2010 CarswellQue 5539, online: CanLII <<http://canlii.org/eliisa/highlight.do?text=linux&language=en&searchTitle=Search+all+CanLII+Databases&path=/fr/qc/qccs/doc/2010/2010qccs2375/2010qccs2375.html>>.
17. See generally Kevin Werbach, "Supercommons: Toward a Unified Theory of Wireless Communication" (2003) 82 *Tex. L. Rev.* 863; Yochai Benkler, "Overcoming Agoraphobia: Building the Commons of the Digitally Networked Environment" (1998) 11:2 *Harvard Journal of Law & Technology* 287.
18. For example, the U.S. placed certain open access requirements on portions of its 700 MHz spectrum; see James B. Speta, "Spectrum Policy Experiments: What's Next?" (2008) *U. Chi. Legal F.* 389 at 404.
19. See generally Sascha D. Meinrath & Michael Calabrese, "'White Space Devices' & The Myths of Harmful Interference" (2008) 11 *N.Y.U. J. Legis. & Pub. Pol'y* 495; Susan P. Crawford, "The Radio and the Internet" (2008) 23 *Berkeley Tech L.J.* 933.

Towards a National Strategy for Digital Inclusion

Addressing Social and Economic Disadvantage in an Internet Economy¹

Garth Graham

Canada is a long way from achieving universal broadband access, especially in rural and remote areas. But the critical issue is not access to broadband technologies. Universal broadband coverage is not the same as universal capacity to use those technologies for development. Regardless of urban or rural, some people will remain marginalized even when everyone is online. It's not enough to give those who are excluded basic access to the technologies. It requires different social skills as much as different technical skills to come in from the cold of digital exclusion.

“Digital inclusion” means that we don't forget those who, for what ever reason, are unable to “connect” effectively. It means that all citizens have the means, skills and tools to integrate the internet comfortably into their lives. Only then will we see the advent of new products and services, new and rewarding jobs, increased knowledge, en-

hanced and meaningful communications and active participation in the institutions and processes of government, society and even of family. Only then will we achieve the productivity gains needed to drive our economy and society into the 21st century.

World development statistics show us that it matters how a country decides to use its money — that social change comes before economic change. For example, the speed of development moves much faster if you are healthy first than if you are wealthy first.² The intention of a national strategy for digital inclusion would be to ensure the well-being and economic productivity of our communities by enhancing the capacity of their most disadvantaged members to be included in daily life online.

Community services sector productivity

Public policy is not yet supporting the transition of our communities into the digital age. Canada does not have a blueprint for how, in an internet economy, the uses of information and communications technologies can be made to serve Canada's socio-economic development, never mind how we can assist those who such an economy excludes. When such a plan emerges, it will not be about technology. But it will encompass the uses of technology for community development and the ways that collaborative tools promote the effectiveness of the community services sector.

Because we are already well into an internet economy, Canada's community services sector now has hundreds of thousands of people involved in the provision of digital inclusion programs. We must not ignore their experience.

The shapers of Canadian public policy need to place more value on the productivity and innovative capacity of this sector. Effective community-based agencies know how to compete for, aggregate and leverage meager resources from many different sources into significant social and economic outcomes. In the same way that they have always survived by innovating, they are now successfully experimenting with new groups and new kinds of groups. Their effectiveness is the critical component of community resilience and self-reliance.

But how can a community collaboratively do this? How does community converge around common cause from a citizen's perspective? Much of the infrastructure of the community services sector still remains organized into vertical silos. Thoughtful use of information and communications technologies can and will support a horizontal integration and networking of community services. A well-defined digital inclusion strategy will reinforce the ability of communities to effectively plan and manage their local resources.

Telecentres

Internationally, “telecentres” is the word used for what Canadians have called “community access.” A telecentre is a public place where people can access computers, the internet, and other digital technologies that enable people to gather information, create, learn, and communicate with others while they develop essential 21st century digital skills. A telecentre provides public access to a variety of online tools and resources in the context of demographically and socio-economically dynamic communities, ever-changing technologies, and locally-driven social and digital initiatives.

In effect, assisted by the Community Access Program (CAP) and its companion youth initiative program (CAP-YI), community access centers have been the backbone of digital inclusion in Canada. Along with young interns and a legion of volunteers, the centers provide job search and software training, technology literacy programs, access to community services, and cultural integration opportunities. They work with local private and public sector partners to provide services and share experience in many different areas — from basic computer skills to website building. In addition, thousands of CAP-YI trained youth gain experience that helps them move on in the world. Networks of telecentres have become a critical part of the infrastructure of many communities and social service agencies across Canada. Strengthening, deepening and intensifying on-going relationships amongst those networks and their support partners through a vibrant, sustainable on and offline community is critical to enhancing the social and economic impacts of telecentres on community development and digital inclusion in Canada.

In the process of designing a National Digital Inclusion Strategy, we need to define and evolve a national network of community-based telecentres that:

1. Recognizes the potential of every Canadian to engage with the internet economy more as an active producer than as a passive consumer;
2. Is based on a national strategy developed through open dialogue with all telecentre stakeholders;
3. Strengthens and expands interactive telecentre networking in order to intensify knowledge sharing about best practices;
4. Is governed by a group officially designated as a “collaborative learning community of stakeholders,” so that shared best practices and learning govern the program direction;
5. Has adequate training capacity for operating it (i.e., a National Telecentres Network Academy that trains managers³ by sharing the online learning capacities of participating agencies);
6. Has a connection from it to broader Canadian national strategies for the uses of information and communications technologies in socio-economic development;
7. Has a multi-stakeholder plan and financing for a transition to local control.

Beyond CAP: A future for digital inclusion

CAP was an infrastructure program (build it and get out). But an infrastructure model does not address the dynamic reality of processes for community development online. CAP was expected to sunset. But community experience in its delivery reveals an added functional responsibility in social programs and community economic development. What CAP proves is that, in a society that is online, people marginal to that society have their burden increased by the gap between their needs for access to processes of digital inclusion and their capacity to use them.

A National Strategy for Digital Inclusion must draw upon the experience of the changing nature of social services delivery and community development that already exists in Canadian communities. There is an opportunity for open discussion of such a strategy that moves the focus towards telecentres and local governments.

It's about an approach to a public policy shaping process, not the design of telecentres. The roles and functions for these centres will vary as various local agencies apply them to what they see as their local needs. Getting acceptance at all levels of government to a community-based approach for the support of digital inclusion will involve:

1. A need for open forums for discussion of the existing program's "lessons learned" and its future potential to increase the resilience and self-reliance of communities under an evolved program.
2. New public policy that endorses the role of digital inclusion in Canada's national strategies for the uses of information and communications technologies in socio-economic development.
3. Support of a new federal-provincial "transitional" program, allowing for a staged transfer of primary operational responsibility to the provinces along with an annual federal funding in recognition of on-line delivery of federal services and programs. The provinces have the most direct involvement with the community-based organizations and institutions that act as delivery points for digital inclusion services as essential infrastructure. That local control will make the program relevant to community-based economic development.

Good public policy enables participation

Public policy does not change in a vacuum. It follows from changes in society. Governments are not isolated from profound changes in social relationship and, therefore, how the nature of citizenship alters in the face of daily life online.

Although still rare, participatory forums to address this issue are beginning to occur at the community-level.⁴ There are communities that have advanced digital inclusion via the negotiation of commu-

nity benefits agreements during explorations of locally controlled broadband initiatives. There are communities that have held intense dialogues over the best routes to social change in a digital age. Their citizens are learning that it is hard work to negotiate the transition from vertical institutions to horizontal networked relationships.

What's missing from Canadian public policy is any understanding of the radical transformation in the way we do things represented by the internet's existence. The internet's strongest potential lies in its ability to:

- increase the capacity of local communities to meet their particular needs.
- increase the capacity of collaborating individuals in those communities to decide for themselves the context of the problems they face.

The drafters of a National Strategy for Digital Inclusion would seek to understand where and how people gain the confidence to appropriate information and communications technologies for their own use. And they would seek to understand the conditions under which that appropriation gets channeled to collective and constructive purposes. What is needed to move towards these goals?

1. An open and distributed process of dialogue (public forums, wikis, websites etc) about a national strategy for digital inclusion;
2. A strategy document that summarizes the conclusions of that dialogue;
3. The means of carrying that strategy forward into the kinds of federal-provincial decision-making forums that are beginning to address a full national strategy for the uses of information and communications technologies in Canada's development.

An acknowledgement

To the memory of Gaylen Duncan, CEO and President of Information Technology Association of Canada from 1996–2003. He embraced the

task of understanding and expressing digital inclusion with his usual curiosity and enthusiasm in the face of any impossible dream. He readily shared his vast experience of how to make sure that economic and political power is applied to just ends. If only he were here, I would tell him that, “Yes, Gaylen, we will make it happen.”

Garth Graham is a consultant and community networking activist with extensive Canadian and international experience in enabling communities and governments to apply Information and Communications Technologies (ICTs) in community development and to plan national strategies for ICT use. He serves as a member of the Telecommunities Canada Board of Directors, Chair for the Board of Directors of the Victoria Free-Net Association and Chair of a Task Force to design a fibre optic network for the Town of View Royal.

Notes

1. This discussion document was adopted by Telecommunities Canada (TC) to support participation in public forums on the role of broadband in social change. It was submitted to Industry Canada’s Public Consultation on the Digital Economy. Telecommunities Canada is a community of practice about the uses of online networks for community development. TC acts to understand and shape the uses of ICTs in our communities. Community networking practices play a significant role in facilitating face-to-face local social interaction. There are now many existing networked communities that are experienced in the effective use of ICTs for community development. Together with like-minded groups, TC’s goal is to connect theory, policy and practice in ways that expand and improve the ability of communities to design their own future. TC has become a significant repository of, and network for, the local experience gained through public participation in the Community Access Program. Telecommunities Canada (TC) advocates for control of open broadband networks as a local responsibility. <http://www.tc.ca>
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4. Examples of open forums on the best routes to socio-economic change in a digital age include:

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- Dalhousie Student Union, Chebucto Community Network (www.chebucto.ns.ca) and Dalhousie Computer Science Society. (2009). “Who is Shaping your Digital Future?” a town hall panel discussion. Halifax. October 26. <http://www.chebucto.ns.ca/townhall/>
- “Digital Engagement: Technology for social benefit.” A U.K. blog to address the use of social technology for a social benefit. <http://digitalengagement.org/>
- Pathways to Technology, First Nations Technology Council (FNTC). (2009). “ICT Capacity Development: Building Strong Sustainable Communities.” British Columbia, FNTC, February. http://www.fntc.info/files/Presentations/2009_ICT%20Capacity%20Plan%20FNTC-ICT%20Summit%20February%2020%202009.pdf
- Telecommunities Canada (www.tc.ca) and SaveOurNet.ca (<http://saveournet.ca/>) have hosted Open Internet Town Hall events in Vancouver, Ottawa and Toronto, 2009. See also: <http://www.internetforeveryone.ca/en/accueil/>
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Manifesto

A Digital Framework for Quebec¹

Communautique

We have already reached the second decade of the twenty-first century and yet, Quebec still does not have a digital strategy!

Is Quebec's digital economy a victim of neglect?

With facts and figures to back them up, many industrialists and entrepreneurs, as well as spokespersons from rural communities and from voluntary sector groups, and academics, have noted the increasing and worrisome delay of Quebec society in this area.

While we continue discussing here — without any decisive action — how we can provide access to high or even intermediate internet speed across our territory, ultra high-speed is being deployed in countries like Finland, Australia and is already a fact of life in others like South Korea. While we continue discussing here — again, with no decisive action — how to familiarize all citizens with digital technologies, Europe is light-years ahead in this area, already having at its disposal an innovative research and development network where citizens often play leading roles.

In comparison, the sluggishness of our political class, both in Quebec and in Ottawa, despite enquiries and petitions, demonstrates a total and dangerous lack of vision at a moment when the 21st century poses great challenges to Quebec in areas such as demography, culture, education, health and economy.

Yet as early as 1998, Quebec had established a national strategy pertaining to the information society; a strategy with ambitious objectives designed to enable the province's role as a "leader among the world's information societies".² Meanwhile, Canada was bragging about being the second country in the world for the number of households with internet access. Today, considering only speed and cost, Canada has slipped to 27th out of 30 OECD countries.³ Quebec's position is even more deplorable given its even lower rates of connectivity and usage.

Of course, the Quebec government has not been totally inactive. It participates in international forums, commissions studies, consults with various social actors, develops its e-administration, supports local initiatives that connect underserved areas, funds social innovation projects and adopts fiscal policies that favour certain technological fields. But these gestures remain paltry in light of the objectives established in 1998, now totally outdated. Since the June 2008 *Seoul Declaration for the Future of the Internet*, several nations, including Australia, Britain, France, Italy and now the U.S., have developed plans that are more coherent and ambitious on socioeconomic and technological levels and have explored partnerships with social actors for their development and implementation.⁴

The situation is even more distressing nationally. After the shambles of the last budget (March 4, 2010), where community access to the internet programs, praised as a success, were nevertheless shelved, then restored but with no future outlook, the Harper government continues to demonstrate its inability to devise an effective pan-Canadian strategy. Clearly improvising, the government held another consultation much like the parody organized in June 2009.⁵ Ignoring dissenting voices, it continues to consider a digital plan primarily aimed at meeting the interests of the telecommunications industry.⁶ In the meantime, studies, reports and recommendations from both public and private sectors are piling up. From pa-

ra-governmental organizations, industry, academia and community groups, these reports all point to the urgency of taking action and they all insist on digital inclusion.⁷

Opportunities and risks

Economically alone, the technology sector now accounts for more than 25% of global growth and is rising rapidly.⁸ One serious study after another demonstrates the tremendous potential of digital technologies for economic development, for creating and maintaining gainful and durable employment, for the delivery of education, health care and other services. Digital technologies have also proven themselves to foster inclusion of disadvantaged populations or in remote areas and to encourage the spread of democracy. Other credible studies also show multiple pitfalls and dangers on the same fronts. Especially of concern is the growing dependence of individuals and organizations on networks, applications and digital content.

Indeed, solutions to the enormous challenges Quebec society faces will not only be technological, let alone digital. However, whether one is “Green”, “Lucide” or “Solidaire”⁹, we must all recognize the revolutionary character of these social and technological changes. If we, Quebecers, are unable, individually and collectively, to master these developments and new applications according to our needs, our values and aspirations, not only do we risk missing out on some remarkable opportunities, but we also risk having to deal with inadequacies and social and economic divisions that will result if decisions are not our own.

Quebec’s civil society has developed remarkable expertise in several fields with regards to research, innovation and use of digital technologies.¹⁰ Civil society is also clearly capable of productive conversations as well as community projects and ambitious collective initiatives. This collective intelligence is our greatest asset to developing and implementing a strategy that would not only meet our unique challenges, but also ensure that original contributions to building the digital world would remain within reach of all citizens.

Call to action

We affirm the need for Quebec to quickly build a comprehensive and ambitious digital strategy and to resolutely mobilize all its forces in the implementation of this strategy in order to meet the social, cultural and economic challenges posed by the present “sociotechnical” revolution.

By setting a stated goal of making the internet a public good to benefit everyone, such a plan should provide relevant and creative responses to the following questions:

- Access for individuals, organizations and communities to networks and content;
- Development of production, supply, use and ownership of content;
- Diversification of applications, services and practices as well as research and technical and social innovation in all sectors (public administration, industry, commerce, social economy, public education, health and social services, communities, democratic institutions);
- Areas of expertise to prioritize and support nationally and internationally;
- Training in schools, community groups and on the job in the context of an information society and knowledge society;
- Preservation and development of cultures and knowledge as well as cultural heritage;
- Open access and sharing of data and scientific knowledge;
- The skills of individuals and innovation in organizations;
- Digital identity and security of individuals and organizations;
- The respective places of free software/content and proprietary developments and products, in the context of the Commons;
- Provincial, national and international issues related to internet governance and technology standards.

We affirm that the successful development and implementation of such a digital strategy in Quebec requires the involvement and commitment of all social actors, all sectors of activity, all segments of the population and all regions.

We also affirm that such an undertaking must provide opportunities for experimentation of new democratic governance practices enabled by digital technologies.

We therefore call on:

- All individuals and organizations to publicly signify their participation and commitment to the development and implementation of a Quebec digital framework by endorsing this Manifesto and by broadcasting it throughout their networks for discussion and amendments;
- The Quebec government to make a decisive and real commitment to take a leadership role in the participatory development and implementation of a Quebec digital strategy and to provide the necessary conditions for its realization;
- The federal government as well as regional and municipal political authorities to undertake, participate in and support similar participatory initiatives.

Communautique connects communities and supports citizen participation by promoting information literacy, appropriation of information and communications technologies and contributing to their development.

Notes

1. This manifesto is the result of a collective effort begun two years ago by stakeholders from different backgrounds: entrepreneurial, academic and not for profit. For the French version and ongoing online discussion please see : Manifeste pour un plan numérique pour Québec. <http://www.communautique.qc.ca/reflexion-et-enjeux/internet-citoyen/manifeste-plan-numerique.html>

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8. Ministry of Government Services of Quebec and Centre francophone d'information des organisations (CEFRIO). (2010). "e-Veille : À la rencontre des gouvernements en ligne du globe, bilan 2009", Quebec City, January.
9. Since 2005, several groups of different political backgrounds have launched "manifestos" in the Quebec public space, such as the "Lucides" and the "Solidaires".
10. Particularly in the areas of multimedia, games, cryptography.

RING

*Competition and Foreign
Ownership Debates
in Telecom*

ME UP

Foreign Ownership in Canadian Telecommunications

Monica L. Auer

Telecommunications companies began operating in Canada years before the country was even formed. The Toronto, Hamilton & Niagara ElectroMagnetic Telegraph Company incorporated in 1846,¹ while the British Parliament only created Canada twenty-one years later.²

Canadians were at the forefront of telecommunications developments for decades. Voices were first delivered over telegraph wires in 1877, after Alexander Graham Bell received a patent of invention for the ‘telephone’ following research that he began at his family’s home in southern Ontario and continued in the United States.³ The world’s first transatlantic radio link was created in 1901 when — with financial support from the Canadian government — Guglielmo Marconi transmitted sounds from the British coast to Newfoundland.⁴ Canadian Reginald Fessenden successfully made the world’s first radio transmissions to ships at sea off the American east coast in 1906,⁵ and Montreal radio station XWA broadcast the world’s first scheduled radio program in 1920, to a meeting of the Royal Society of Can-

TABLE 1 Canada EU Size Comparison

Comparison of Canada with European nations, in terms of size	Sq Km Thousands	Number that would fit into Canada
Canada	9985	1
European Union:		
Belgium (BE)	30	330
Bulgaria (BG)	111	90
Czech Republic (CZ)	77	129
Denmark (DK)	43	232
Germany (DE)	357	28
Estonia (EE)	43	230
Ireland (IE)	68	146
Greece (EL)	131	76
Spain (ES)	506	20
France (FR)	544	18
Italy (IT)	295	34
Cyprus (CY)	9	1074
Latvia (LV)	62	160
Lithuania (LT)	63	159
Luxembourg (LU)	3	3840
Hungary (HU)	93	107
Malta (MT)	0.3	33282
Netherlands (NL)	34	295
Austria (AT)	83	121
Poland (PL)	313	32
Portugal (PT)	92	109
Romania (RO)	230	43
Slovenia (SI)	20	497
Slovakia (SK)	49	204
Finland (FI)	305	33
Sweden (SE)	410	24
United Kingdom (UK)	244	41
European Union	4215	2

SOURCE: Wikipedia (July 2010)

ada in Ottawa.⁶ In 1962 Canada was the third country after the United States and Russia to design, build and (through NASAT) launch a satellite into orbit around Earth⁷ — the Alouette 1. Research in Motion, the company that invented the Blackberry, was founded in 1984 in Waterloo, Ontario.⁸

Yet building telecommunications networks that spanned five time zones and challenging geography required huge financial investments. To put the construction challenge into perspective, in terms of geographic size all 27 countries in today's European Union could fit inside Canada — twice (see Table 1).

In the 19th century the Canadian government's solution to the enormous difficulties of wiring Canada was foreign capital: between 1854 and 1857 alone, an estimated \$100 million flowed into Canada from foreign investors, to build the railway lines beside which poles would carry telegraph and telephone lines.⁹

Initially foreign investment in Canadian telecommunications attracted little concern, as it appeared to be achieving the goal of extending telecommunications across the country. In fact, when Parliament approved the incorporation in 1880 of the company that eventually became Bell Canada, American interests held a majority of its voting shares,¹⁰ the telephone patents on which Bell Canada relied were held by an American-owned company, the equipment and parts used to manufacture telephone handsets in Canada came from the United States, key decision-makers in the company were American and the company used the handbooks, methods and specifications of the American predecessor to American Telephone and Telegraph (AT&T).¹¹ Based on these factors, used today to assess foreign control, non-Canadians controlled Bell Canada when it was formed.

By the late 1880s, however, there were widespread complaints about the quality, availability and cost of telecommunications service in Canada. Members of Parliament learned from their constituents that foreign-controlled telecommunications companies typically ignored rural areas,¹² eliminated new entrants with anti-competitive pricing behaviour¹³ and charged excessive rates.¹⁴ At least one newspaper that published stories critical of telegraph company practices lost its telegraph-based press connections.¹⁵

Canada's sparsely populated provinces faced special challenges in obtaining telecommunications service for their residents. In 1889, for example, Bell Canada required a minimum of twenty to twenty-five subscribers (not simply residents) in one location before it would install a telephone exchange,¹⁶ and in 1905 the president of Canada's Bell Telephone Company told Members of Parliament that it "certainly, and quite properly" would not give preference to "a lot of farmers' lines" compared to larger numbers of subscribers in urban centres because dollar for dollar, the lines provided to farms yielded a lower return on investment.¹⁷ Unable to persuade telecommunications companies to provide or improve service to all of their residents, six provinces nationalized their telephone systems by the early 1900s. Prince Edward Island was the first, in 1885, followed by Nova Scotia and New Brunswick in 1887,¹⁸ Manitoba and Alberta in 1908, and Saskatchewan in 1909.¹⁹

Eventually Parliament acted to address Canadians' concerns about telecommunications service. It amended the legislation governing Bell Telephone in 1882 to declare that its works were "to be for the general advantage of Canada".²⁰ In the same year the American Bell telephone company's interest in Canada's Bell Telephone decreased to 46.4%.²¹ Ten years later Parliament prohibited Bell Telephone from raising its rates without the government's approval,²² and by 1913 Parliament had created the first 'network neutrality' rules by prohibiting telecommunications carriers from interfering with the content of the messages they carried.²³

Yet Parliament did not explicitly begin to deal with foreign ownership in telecommunications until the 1980s. By then, AT&T had divested itself of all interests in Bell Canada and the latter had ended its long-standing service agreement with AT&T.²⁴ When Rogers Cantel obtained Canada's first national cellular telephone licence in 1984, the federal Department of Communications limited its foreign ownership to 20% of the company's voting shares.²⁵ In 1987, the government issued *A Policy Framework for Telecommunications in Canada* that asserted that "domestic ownership of Canada's telecommunications infrastructure is essential to national sovereignty and security."²⁶

Half a decade later, Parliament affirmed in its 1993 *Telecommunications Act* that telecommunications plays an essential role in Cana-

Telecommunications Act, S.C., 1993, c. 38

Canadian Telecommunications Policy

[Objectives]

7. It is hereby affirmed that telecommunications performs an essential role in the maintenance of Canada's identity and sovereignty and that the Canadian telecommunications policy has as its objectives

(d) to promote the ownership and control of Canadian carriers by Canadians;

(e) to promote the use of Canadian transmission facilities for telecommunications within Canada and between Canada and points outside Canada....

PART II: ELIGIBILITY TO OPERATE

Canadian Ownership and Control

[Eligibility]

16. (1) A Canadian carrier is eligible to operate as a telecommunications common carrier if it is a Canadian-owned and controlled corporation incorporated or continued under the laws of Canada or a province.

(3) For the purposes of subsection (1), a corporation is Canadian-owned and controlled if

(a) not less than eighty per cent of the members of the board of directors of the corporation are individual Canadians;

(b) Canadians beneficially own, directly or indirectly, in the aggregate and otherwise than by way of security only, not less than eighty per cent of the corporation's voting shares issued and outstanding; and

(c) the corporation is not otherwise controlled by persons that are not Canadians.

dian national sovereignty, that Canadian telecommunications policy should promote Canadian ownership and control of Canadian telecommunications carriers, and that only companies meeting specified domestic ownership criteria are eligible to operate as telecommunications carriers in this country.

The *Telecommunications Act* currently limits non-Canadians to ownership of no more than 46 $\frac{2}{3}$ % of the voting shares of a Canadian telecommunications carrier. The *Radiocommunication Act* also requires wireless telecommunications operators that offer cell phone service to meet the Canadian ownership criteria of the Telecommunications Act. A variety of companies that offer telecommunications services are not subject to any foreign ownership restrictions, however, such as companies that simply resell telecommunications services such as long-distance.

By some measures Canada's telecommunications system is among the best in the world, providing virtually universal accessibility to a small population in the planet's second largest country. Roughly three out of four households have at least one cell phone (see Table 2), and by the late 1990s 98.6% of Canadian households had at least one fixed or wireless telephone, slightly higher than in the U.S. (98.3%), Australia (96.4%), Italy (97.5%) and the UK (94%).²⁷ Canada's telecommunications companies appear healthy, consistently earning operating profit margins that exceed the industrial average over the last decade. A 2009 report commissioned by seven major Canadian telecommunications companies concluded that in comparison with countries of similar size, "Canada clearly remains a leader in broadband availability",²⁸ while research undertaken by one of Canada's largest media unions in 2010 concluded that the prices paid by Canadians for mobile telephone service compare favourably with prices paid for similar services in other industrialized countries.²⁹

Yet concerns that resemble the complaints of the early 1900s have been raised for the past several years about the price and availability of telecommunications services such as high-speed internet and mobile telephony. A 2009 study of internet policies around the world undertaken on behalf of the United States' Federal Communications Commission concluded that based on internet "prices, speeds, and 3G mobile broadband penetration" Canada "shows up as quite a weak performer, overall."³⁰

TABLE 2 Percent of Canadian households

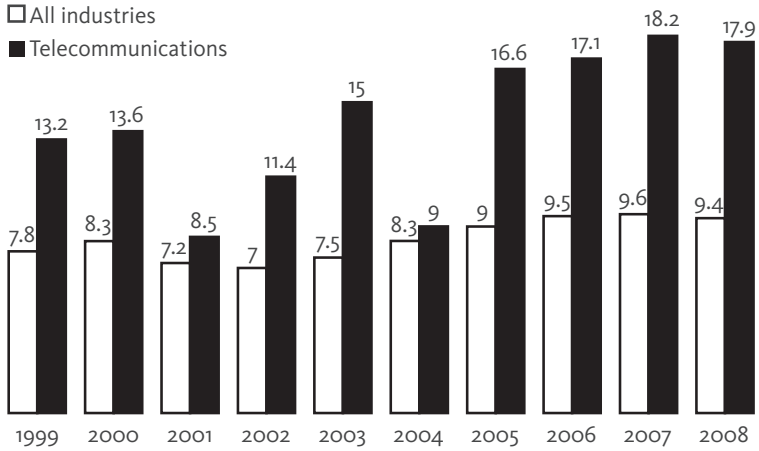
	with cell phone	with cell phone only	with landline only	without telephone service
2003		1.30%		
2004		2.70%		1.50%
2005		4.80%		1.20%
2006	66.80%	5.10%	29.60%	1.30%
2007	72.40%	6.40%	24.00%	0.90%
2008	74.30%	8.00%		0.90%

SOURCES: 2008: Statistics Canada, *The Daily* (15 June 2009); 2007: *The Daily* (23 April 2008); 2006: *The Daily* (4 May 2007); 2005: *The Daily* (5 April 2006).

Foreign ownership is frequently recommended to address these concerns. At least four separate public bodies have considered proposals for increasing or permitting foreign ownership in the Canadian telecommunications sector. A 2003 report of the House of Commons Standing Committee on Industry, Science and Technology (INDU Committee) recommended the elimination of minimum Canadian ownership requirements for Canadian telecommunications carriers,³¹ as did the 2006 report of the government-appointed Telecommunications Policy Review Panel.³² The 2008 report of the government-appointed Competition Policy Review Panel also argued that “existing foreign investment restrictions...prevent Canadians from capturing the full benefits” of increased competition and innovation in telecommunications.³³ Yet in June 2010 when the INDU Committee again reviewed Canada’s foreign ownership rules and regulations under Canada’s telecommunications, radiocommunication and broadcasting Acts, it did not recommend changes to current foreign ownership levels.

In June 2010 Industry Canada published a consultation paper seeking Canadians’ views on three proposals regarding foreign ownership in telecommunications: to increase foreign ownership limits from 46²/₃% to 49%; to eliminate foreign ownership restrictions on telecommunications common carriers with less than 10% of the market; or to remove foreign ownership restrictions altogether.³⁴ The paper did not provide estimates of the impact of its proposals on problems related to telecommunications’ pricing, availability and/or service quality, or on any other issues. Over four hundred individuals,

FIGURE 1 Operating Profit Margins: 1999–2008



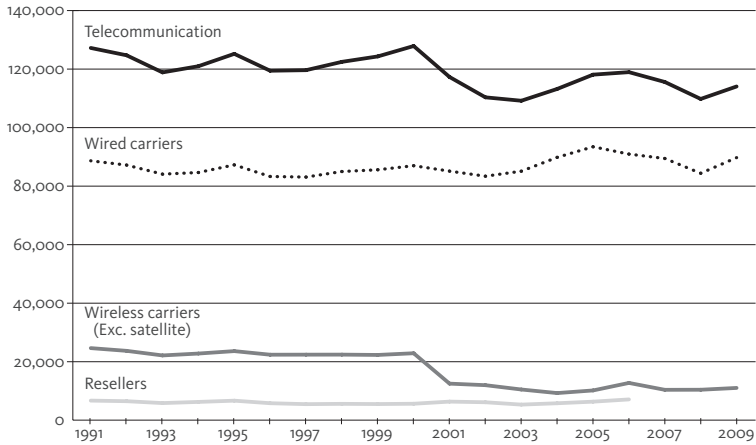
SOURCE: Statistics Canada (CANSIM)

groups, associations, unions and companies filed submissions about Industry Canada’s proposals. At the time of writing, the federal government was considering these submissions and its own response.

Foreign ownership in Canadian telecommunications involves issues that (in alphabetical order) include, but are not limited to, access by Canadians with disabilities, capital investment levels, cultural sovereignty, employment, intellectual property rights, national security, privacy rights, regulatory enforcement, research and development, rural-urban service and trade treaties. There are no quick and easy answers to the complex question of foreign ownership in the telecommunications sector.

Consider employment, for example. In 2009 telecommunications companies in Canada employed just over 114,000 people, 78% of whom worked for wireline telecommunications carriers. Although industrial employment in Canada has increased by 31% since the early 1990s, telecommunications employment decreased by 10%. In 1991, telecommunications employment accounted for 1.15% of all industrial employment; by 2009 it accounted for 0.78%. From the business perspective that operating efficiencies are desirable, decreasing employment may be a benefit – but from the socio-political perspective that employment growth means more Canadians earn taxable income, decreasing employment is undesirable.

FIGURE 2 Telecommunications Employment: 1991–2009



SOURCE: Statistics Canada (CANSIM)

Would employment be affected if Parliament adopted Industry Canada's second option and permitted 'small' telecommunications companies earning less than 10% of total telecommunications revenues to be acquired by non-Canadians? According to the CRTC, total telecommunications revenues in Canada in 2009 amounted to just over \$40 billion.³⁵ Carriers with 10% or less of that revenue included Quebecor with \$3.8 billion,³⁶ Shaw with \$3.4 billion³⁷ and Cogeco with \$1.3 billion.³⁸ The 37 independent common carriers serving locations such as Whitehorse, Price Rupert and North Bay also each earned less than \$4 billion in 2009.³⁹ If these companies were acquired by non-Canadians, it seems reasonable to assume that their administrative, legal and regulatory functions could be transferred to the new owners' existing corporate structures; in the absence of legislative restrictions, functions such as research and development could also be transferred outside of Canada. Increasing foreign ownership — whether for small companies or the entire sector — could therefore result in fewer jobs for Canadians, and a lower tax base for Canadian governments. Determining whether a negative result such as this is outweighed by other benefits is a political question.

Lost in the barrage of panel reports, consultations and committee studies over the past decade has been independent and impartial

empirical analysis of the costs and benefits of foreign ownership, in terms of the various interests noted previously. When asked in May 2010 for any research undertaken by or for the CRTC since 2000 about the impact of increased foreign investment in Canadian telecommunications, the CRTC answered that it had none.⁴⁰

Informed and reasoned debate about alternatives to achieving Canadians' objectives for the pricing, availability and quality of telecommunications service has also been generally absent. Regulation, for example, is often presented as the cause of high prices or lack of service, for which the solution is deregulation that will permit the 'marketplace' to generate more competitive rates. Accordingly the CRTC has reduced telecommunications regulation for the past thirty years, by permitting competition for private line and data services (1979),⁴¹ in customers' equipment (early 1980s), in long distance service (in 1992),⁴² in local telephone service (1997),⁴³ and in public pay telephones (1998).⁴⁴ Since 2006 the CRTC has allowed incumbent telecommunications service providers to change subscribers' rates "within an approved [undisclosed] range, at any time, without delay and without the requirement to file a tariff application and obtain Commission approval",⁴⁵ and it "does not regulate the rates, quality of service or business practices of wireless service providers because the market for wireless services is sufficiently competitive".⁴⁶ If Canadians are concerned that telecommunications rates are increasing, should the CRTC's premise that deregulation is superior to regulation be reviewed?

One alternative to the three Industry Canada options would be for members of Parliament to assess whether Canada's current legislative approach to telecommunications is achieving Parliament's goals. Such a review could provide Canadians and Parliamentarians with the evidence required for an informed discussion and debate about the direction in which Canada's communications system should be guided. In turn, Parliament would be better placed to direct the actions of the government and/or independent agencies such as the CRTC, by establishing clear and measurable goals for Canada's socio-economic, technological and cultural performance, as well as for important issues such as cultural sovereignty, national security, privacy, accessibility, employment and control over content.

Monica L. Auer, M.A., LL.M. is a lawyer and researcher practising administrative law in Ottawa, Ontario. She has also written about the CRTC's enforcement of the Broadcasting Act and concentration of ownership in broadcasting.

Notes

1. Babe, R.E. (1990). *Telecommunications in Canada : Technology, Industry and Government* Toronto: University of Toronto Press, page 37.
2. *The Constitution Act, 1867* (U.K.), 30 & 31 Victoria, c. 3., formerly known as the *British North America Act, 1867*, 30 & 31 Victoria, c. 3.
3. See *Re Bell Telephone Company* (1885), 9 O.R. 339 (On Court of Comm. Pleas, Cameron C.J. and Galt J. June 27, 1885).
4. Rowland, W. (1999). *Spirit of the Web: The Age of Information from Telegraph to Internet*, Toronto: Key Porter Books, page 121.
5. Media Awareness “Radio in Canada: a timeline” Retrieved from <http://www.media-awareness.ca/eng/indux/radio/timeline.htm#1800s>
6. *Ibid.*
7. North American Space Agency. “[35] ALOUETTE” Retrieved from NASA website: <http://history.nasa.gov/SP-4402/ch2.htm>
8. Research in Motion, “Company” Retrieved from Research in Motion website: <http://www.rim.com/company/index.shtml>
9. Berton, P. (1970). *The National Dream: The Great Railway, 1871–1881*. Toronto: McClelland and Stewart Limited, page 16.
10. *Ibid.*
11. Rens, J.-G. (2001). *The Invisible Empire A History of the Telecommunications Industry in Canada, 1846–1956*. Montreal: McGill-Queen's University Press, page 64.
12. The company required a minimum of 20 to 25 subscribers in one location before installing an exchange, for example. *Ibid.*, page 106, note 18.

In testifying before the House of Commons Select Committee on Telephone Systems, the president of Bell Telephone Company of Canada said

We certainly, and quite properly...give the preference to the needs of a larger number rather than to a lot of farmers' lines. There is a much better return from the expenditure of money on that work than there will be from the expenditure of the same money on smaller lines.

House of Commons Select Committee on Telephone Systems (1905). *Proceedings*, page 622.

13. In Dundas, Peterborough and Port Arthur, for example, “...Bell offered free telephone service for as long as it took to eliminate a rival, then returned to previous rates....in every case...it was Bell’s reaction to opposition by the municipal companies, which were using taxpayers’ money to discount their service. Overall, however, the practice was rare.” Rens, J.-G., *supra* note 11, page 86. In Quebec, Bell offered former subscribers who shifted their business to a competitor a year’s free service on three-year contracts. Babe, R.E., *supra* note 1, page 76.

14. “Between 1880 and 1887, the average annual cost of a subscription to telephone service was the equivalent of one-tenth of the average annual salary of a Canadian worker. So it was hardly surprising that the telephone was limited to companies, governments, and those in the upper echelons of society.” Rens, J.-G., *supra* note 11, page 70. Between 1901 and 1902, 212 municipalities had petitioned Parliament demanding that it control Bell’s rate increases. Babe, R.E., *supra* note 1, page 91, note 9.

15. *Ibid.* page 58.

16. Rens, J.-G., *supra* note 11, page 106. When the average annual cost of a telephone subscription was 10% of the average Canadian salary, as Rens notes at page 70, requiring a minimum of 20 subscribers amounted to 2 years’ of annual income – a significant commitment.

17. House of Commons Select Committee on Telephone Systems, *supra* note 13.

18. Rens, J.-G., *supra* note 11, pages 81–82.

19. Babe, R.E., *supra* note 1, pages 103, 107 and 110.

20. *An Act to amend the Act incorporating “The Bell Telephone Company of Canada”*, S.C. 1882, c. 95, 45 Vict., s. 4.

21. Rens, J.-G., *supra* note 11, page 64.

22. *An Act respecting the Bell Telephone Company of Canada*, S.C. 1892, c. 67, 55–56 Vict., s. 3. Parliament subsequently addressed rates more explicitly in 1902:

3. The rates for telephone service in any municipality may be increased or diminished by order of the Governor in Council upon the application of the Company or of any interested municipality, and thereafter the rate so ordered shall be the rates under this Act until again similarly adjusted by the Governor in Council.

3.2 In increasing or diminishing said rates due regard shall be had to the principle embodied in section 3 of chapter 67 of the statutes of 1892 and to new conditions which have obtained since.

An Act respecting the Bell Telephone Company of Canada, S.C. 1902, c. 41, 2 Edw. VII.

23. Before the internet, instant transmission was enabled by the telegraph – and by the late 1800s,

...virtually every daily [newspaper] in Canada had to subscribe to both Canadian Pacific's news and its transmission service, simply because the company bundled the two together under one flat price....So heavy-handed indeed was Canadian Pacific Telegraphs in these years that it cut off all press connections to a paper in Nelson, BC, which had deigned to publish stories critical of Canadian Pacific – explaining briefly but sardonically that “Nothing seems to please you.”

...vertical integration between carriage and content at the time seemed “natural” ...until in 1970 when three Winnipeg dailies formed a co-operative news service.... The railway countered by withdrawing press rates entirely from Winnipeg....

Such abuses were finally terminated in 1910, when the Board of Railway Commissioners...ruled that Canadian Pacific Telegraphs' press rates had been unduly discriminatory....

Babe, R.E., *supra* note 1, page 58. Subsequently, in 1913, Parliament enacted new legislation that prohibited carriers from interfering with content, in *An Act respecting Radiotelegraphy*, S.C. 1913, c. 43, 3–4 Geo. V., s. 7:

Any person...who without lawful excuse interferes with or obstructs any radio-communication, shall be guilty of an offence and shall be liable on summary conviction to a penalty not exceeding five hundred dollars and costs or six months' imprisonment.

(An earlier statute regarding telegraphs in the province of Canada had, however, prohibited electric telegraph companies from granting preferential treatment:

The owner of, or the Association owning any Telegraph line in operation, at that time or since that period shall, except in cases provided for in the next section [regarding the priority to be given to government messages], transmit all despatches in the order in which they are received, under a penalty of not less than twenty nor exceeding one hundred dollars, to be recovered, with costs of suit, by the person or persons whose despatch has been postponed out of its order.

An Act respecting Electric Telegraph Companies, S.C. 1859, c. 67, s. 14.)

24. Babe, R.E., *supra* note 1, page 178.

25. House of Commons Standing Committee on Industry, Science and Technology (April 2003). *Opening Canadian Communications to the World: Report*, (37th Parl. 2nd Sess.).

26. *Ibid.*

27. Statistics Canada. *Telecommunications in Canada: 1997*, Catalogue No. 56-203-X1B, page 18.
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31. House of Commons Standing Committee on Industry, Science and Technology (April 2003), *supra* note 29.
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37. Shaw Communications Inc. (2009, August 31) *Annual Report*, page 58.
38. Cogeco Inc. (2009). *Annual Report*, page 4.
39. CRTC. "Independent Carriers" Retrieved from CRTC website: <http://support.crtc.gc.ca/tlcm1sts/default.aspx?indx=28&lang=e>; see also CRTC's 2010 *Communications Policy Monitoring Report*, *supra* note 35, Table 5.1.4 ("Total telecommunications revenues, by type of service provider").

40. CRTC ATIP Coordinator. (11 June 2010) Reference A-2010-00015.
41. Babe, R.E., *supra* note 1, page 6.
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44. CRTC (1998, June 30). Telecom Decision 98-8: Local Pay Telephone Competition. Ottawa.
45. CRTC (2006, November 23). Telecom Decision CRTC 2006-75: Rate ranges for services other than voice over Internet Protocol services. Ottawa.
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Structural and Functional Separation in Broadband Networks

An Insufficient Remedy to Competitive Woes in the Canadian Broadband Market

Catherine Middleton

With only a few large companies dominating the market in Canada, the lack of competition in telecommunications is an ongoing problem for which there are no easy solutions. The most difficult and potentially the most effective resolution could be to restructure the industry according to its wholesale/retail components. The purpose of this article is to explain how this concept works in other parts of the world and how it might work in the context of the Canadian residential broadband market.

Since the early days of broadband provision, OECD policy makers have embraced competition as a means for increasing broadband network availability, recommending competition between different infrastructures as a foundation for broadband policy.¹ In the United States and Canada, the policy environments have encouraged this approach, known as facilities-based competition, wherein competing infrastruc-

ture providers, primarily cable and telephone companies, offer broadband connectivity to individuals' homes on competing platforms.

By 2009, 85% of Canadian households could access broadband services using DSL (provided using a telephone connection) and 80% had access to broadband from a cable company. 95% of Canadian households have access to at least one broadband service (DSL, cable or fixed wireless), and mobile wireless broadband (offered by cell phone companies) is now available to 99% of the population. The facilities-based competition approach to encouraging the supply of broadband connectivity has been effective in offering consumers a choice of access technologies. Approximately 62% of Canadian households chose to subscribe to broadband services (at speeds of 1.5 megabits per second or greater) in 2009.² But as the CRTC notes, the market is highly concentrated, and although consumers do have a choice between cable and telephone broadband service providers, broadband prices are somewhat higher in Canada than elsewhere in the OECD, and services are slower.³ A report commissioned by Canada's largest Internet Service Providers (ISPs) suggests that Canadians do have good broadband service options, reinforcing the importance of consumer choice among technologies, and noting that prices for entry level services are very affordable.⁴

While it is the case that Canadians living in urban centres have easy access to what can be described as 'first generation' broadband services (those provided over existing cable and copper networks), some observers suggest that the dominance of incumbent⁵ telephony companies and large cable companies has resulted in a nominally competitive environment that does not actually encourage innovation in broadband services, or enable market entry of new competitors.⁶ Indeed, the broadband services in 94.3% of Canadian households are provided by incumbent telephone companies or cable companies, and five companies — Bell, Telus, Rogers, Vidéotron and Shaw — collectively earned 76% of all retail internet access revenues in 2009.⁷ Other providers (generally smaller, independent companies) play a very small role in the Canadian broadband market, and on this point, the CRTC notes that "Observers have asserted that the concentration of broadband revenues accruing to ILECS

[incumbent telephone companies] and cable providers has the effect of keeping consumer prices higher than they might otherwise be”.⁸

In markets like Canada where competition exists between infrastructure providers, there are mixed opinions about the need for additional service providers. Facilities owners suggest that there is robust competition between platforms, but there is less competition among providers on any single platform. So while Canadians have a choice between cable or DSL broadband providers, there is limited choice as to which DSL or cable service they can select. Further, if a household is interested in ‘bundling’ some combination of cell phone, TV, internet and phone services to receive discounted pricing (an option taken up by 34% of households in 2009), the only choice in most cities is to buy service from the single cable company or the single incumbent phone company that operates in that market. The CRTC notes that this situation “has the potential to entrench the dominant position held by incumbent facilities-based providers”.⁹ As such, the case for encouraging other service providers to enter the market is that they can offer competition *within* DSL and cable markets¹⁰, challenging the incumbents’ duopoly, and offering variety in pricing (perhaps offering higher speeds or higher download caps than available with comparably priced services), contract terms (e.g. not requiring a long-term commitment to the service provider), and products (e.g. selling ‘dry-loop’ DSL, which allows customers to get DSL service without paying a monthly telephone subscription fee).

Because building new facilities to provide broadband services to people’s homes requires very high levels of investment, regulations are in place that allow companies that do not own their own infrastructure to provide service by making use of existing infrastructure. Either through purely commercial arrangements, or by means of regulated wholesale access, market entrants (competitors) provide broadband service using the incumbents’ networks. The rationale for regulating wholesale access to existing infrastructure is that it is not economically efficient to duplicate parts of this infrastructure (e.g. the copper wire connecting an individual’s house to the telephone company’s exchange), but by sharing part of the network, it is possible to encourage new companies to enter the market as competitors.¹¹

Theory suggests that over time the market entrants will be able to build up a sufficient customer base to allow them to reduce their dependency on incumbents' infrastructure, and to invest in their own facilities. But the 2006 Telecommunications Policy Review Panel concluded that "There is no evidence in Canada that the CRTC's 'stepping-stone' strategy has provided an effective transition to greater reliance by entrants on their own facilities".¹² This point highlights the challenges for market entrants competing with incumbent providers using the incumbents' networks, and it is in this realm where the separation of infrastructure provision (wholesale access) and service provision (retail broadband sales) is relevant. Until market entrants can build up a sufficient business to invest in their own infrastructure, they have limited control and flexibility in the services they can offer because they are dependent on their dealings with the incumbents.

This dependency has been highlighted by the recent uproar over Bell and Bell Aliant's efforts to impose usage-based billing on their wholesale customers.¹³ The usage-based billing issue in Canada is but one example of how incumbents operating in both retail and wholesale markets make it difficult for wholesale customers to develop their own viable retail products.¹⁴ Wholesale access is regulated to mitigate this problem of incumbent market power, but the recent Canadian experience shows that regulatory decisions do not always deliver a more competitive wholesale regime. Regardless of the final determination regarding usage-based billing in the Canadian broadband market, the issue illustrates the difficulties in establishing competitive retail offerings by means of regulated access to incumbents' networks. It is for this reason that functional separation is often proposed as a viable remedy.

In a functionally separated incumbent, there is a separation between the wholesale and retail operations, but both can still be owned by the same company. For example, in the United Kingdom, BT Retail provides broadband services to residential and business customers, and Openreach (created in 2006) provides access to network infrastructure used by competitors to deliver their own broadband products.¹⁵ Functional separation can be imposed upon an incumbent by a regulator (as happened in the United Kingdom), or it may be undertaken voluntarily (often because of a perceived threat that sepa-

ration may be imposed, as was the case in Sweden). The objective of functional separation is to remove any incentive for the wholesale provider to favour its own retail operations over those of competitors. In Australia, the incumbent Telstra was required to undertake 'operational separation' in 2006, designed to enforce transparency and ensure equivalence in retail and wholesale service provision.¹⁶

Structural separation takes the separation a step further, and requires that wholesale and retail operations be conducted as strictly separate businesses, with no allowance for common ownership. Examples of structural separation are more common in 'next generation' networks that provide fibre connectivity direct to homes and businesses. In Singapore for example, the Next Generation National Broadband network is being built by OpenNet.¹⁷ OpenNet is known as 'NetCo', that is the network operator, and Nucleus Connect is the 'OpCo' or operating company. Nucleus Connect¹⁸ sells services to retail service providers, but does not offer any retail products itself. A similar principle will apply with Australia's National Broadband Network. The network is being built by NBN Co Ltd.¹⁹, which will operate solely as a wholesaler of network access, offering no competition to retail service providers. The Alberta Supernet is operated on a similar basis, with the operating company Axia NetMedia offering no retail services.²⁰

There is no requirement that incumbent broadband providers in Canada functionally separate their wholesale and retail operations. Evidence presented to the CRTC in a variety of proceedings over many years suggests that incumbents do discriminate against the retail providers to whom they sell network access, indicating that a functional separation regime could benefit the competitive retail providers and their customers. Documented forms of discrimination include price discrimination (e.g. where the incumbent telco or cableco sets their wholesale price for a service higher than the price they charge their own customers for the same service²¹) and non-price discrimination (where retail providers cannot provide the same services to their customers as offered by the incumbent provider). See the article by Van Gorp in this collection for further details on this issue.

An example of non-price discrimination is the refusal of incumbents Bell, Bell Aliant and Telus to make their higher speed DSL ser-

vices available on a wholesale basis, despite two CRTC orders requiring that they do so. The telcos submitted a petition to the Governor in Council opposing these rulings, and in late 2009 the Governor in Council (the Governor General acting on the advice of the federal cabinet) referred these rulings back to the CRTC for further consideration.²² In August 2010 the CRTC ruled, again, in favour of a speed-matching requirement for wholesale broadband access.²³ In response, Mirko Bibic, Bell's Executive Vice-President of Regulatory Affairs continued to question the CRTC's rulings, stating "I am astonished at how the CRTC can come back and give cabinet the very same decision that cabinet asked them to look at again. We are certainly going to be making our views well known."²⁴ This quote indicates that non-price discrimination is viewed as an acceptable practice by Bell, despite repeated rulings to the contrary from the CRTC, and illustrates the challenges for competitors who wish to offer the same retail services as their wholesale providers do.

Webb argues that "The very reason for considering functional separation arises out of the misgivings that the current methods to control discriminatory behavior may not be fully effective".²⁵ It certainly appears that the CRTC has had difficulty implementing or enforcing policies that eliminate discrimination against market entrants in the Canadian wholesale broadband arena, and as a result, the competitive impact of regulated wholesale network access in Canada has been minimal. As noted, competitors serve fewer than 6% of broadband subscribers in the country.²⁶ In contrast, in the United Kingdom, where functional separation has been in place for several years, market entrants are now investing in their own infrastructure, and have gained significant market share among DSL providers. Competitors offer the same speeds as the incumbent, and prices have dropped dramatically since separation was introduced.²⁷ By the third quarter of 2009, no ISP had more than 30% market share, and five providers had a market share of 10% or greater²⁸ indicating a fundamentally different market structure than in Canada. It seems that functional separation has been effective in the United Kingdom, resulting in improved broadband service for customers, while not dampening incentives for investment. In Australia, since operational separation (and the resolution of a pricing dispute re-

garding access to the incumbent's infrastructure) a vibrant competitive market for DSL and DSL2+ services²⁹ has emerged.³⁰

Would functional separation regulation be effective in Canada? Unlike other countries in which separation regulations have been introduced, Canada does not have a single telecom incumbent. While regulation could certainly be applied to all Canada's incumbents, this could prove more challenging than achieving functional separation within a single incumbent. Although much of the discussion here regarding separation has revolved around telecom broadband providers,³¹ the introduction of functional separation in Canada would also need to apply to cable companies,³² potentially adding to the complexity of the exercise. Establishing functional separation in the Canadian broadband market would be complicated, but based on the results of functional separation in other regimes, it would be likely to foster more competition in the broadband market, particularly among DSL providers.

Unfortunately however, the longer term outlook for competitive service providers is not good. Setting aside the regulatory challenges of wholesale access, the technological limitations of DSL provision mean that the speeds that can be provided to customers using existing and upgraded DSL networks cannot easily match those that can be provided by upgraded cable networks, new wireless networks, or fibre to the home networks.³³ While market entrants have been lobbying the CRTC for improved access to DSL services, far fewer have made use of cable infrastructures (through TPIA — Third Party Internet Access — tariffs). There are a number of reasons for this,³⁴ but as a result, few market entrants are able to provide their services using cable infrastructure. The recent CRTC decision³⁵ on wholesale access to broadband networks does require incumbent telcos and cablecos to allow competitors access to their next generation network infrastructure, but the bigger question is whether competitors can establish sufficient market share to stay in business into the future.

Even with access to faster networks, the competitive market providers are limited in their offerings. They are able to differentiate their services based on customer service and contractual terms, but have few other options. Unlike cablecos and incumbent telcos, they cannot

provide TV services³⁶ and they do not have mobile phone offerings, meaning they cannot offer a bundle of telecommunication services. Independent ISPs must innovate to survive, but this is increasingly difficult. CRTC Commissioner Timothy Denton, dissenting in part with the recent decision on wholesale access notes that the decision “keeps independent ISPs somewhat competitive.” He says that the Commission’s decision “neither eliminates them [independent ISPs] nor allows them the scope to compete effectively. It maintains them in a kind of regulatory limbo.”³⁷ Denton was referring specifically to a request that incumbent telcos be required to offer a more flexible wholesale DSL product, one that Denton believes would foster innovation among market entrants and allow them more scope to establish viable, competitive businesses that offer Canadians real alternatives to the incumbents. He argues that the Commission remains ambivalent about the role of independent ISPs, companies that “are allowed to exist but denied the means to innovate.”

Around the world, functional separation in the wholesale broadband access market has allowed competitors greater flexibility and scope for innovation. In Canada, the usage-based billing issue has raised consumer awareness of independent ISPs and will likely result in increased market share for them. But with persistent and fierce competition from the dominant cable and telco incumbents, the prospects for independent ISPs in Canada, with or without functional separation, are not strong. In other markets, functional separation was introduced earlier, allowing market entrants to build their businesses to a point where they are able to compete with incumbents. Functional separation would make it easier for Canada’s independent ISPs to get access to critical network infrastructure, but the issue is not on the CRTC’s agenda. Even if the Federal Government were to follow the lead of other countries and require functional separation, by the time it was implemented, it is not clear how many independent ISPs will remain to benefit from this change to the wholesale regime. Because the Canadian wholesale access regime for existing broadband infrastructure is not working well any efforts to improve wholesale access, especially to next generation networks, will benefit Canadians by encouraging competition in the market. Unfortunately however, neither functional nor structural

separation alone will remedy the competitive issues in the Canadian broadband market.

Catherine Middleton holds the Canada Research Chair in Communication Technologies in the Information Society at the Ted Rogers School of Management, Ryerson University. Her research focuses on the development and use of broadband and mobile infrastructures. Links to her research projects can be found at <http://www.broadbandresearch.ca>.

Notes

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4. Mark H. Goldberg & Associates Inc., & Giganomics Consulting Inc. (2009). *Lagging or Leading? The State of Canada's Broadband Infrastructure*. Toronto. <http://www.gstconferences.com/LagOrLead.pdf>.
5. The largest of these are Telus, SaskTel, MTS, Bell, Télébec and Bell Aliant. Each offers phone and Internet services in a specific geographic area, and some also offer competitive wireless service and business Internet access in various markets across the country.
6. Benkler, Y., Faris, R., Gasser, U., Miyakawa, L., & Schultze, S. (2010). *Next Generation Connectivity: A Review of Broadband Internet Transitions and Policy from around the World*. Cambridge, MA: Berkman Center for Internet & Society, Harvard University. http://cyber.law.harvard.edu/sites/cyber.law.harvard.edu/files/Berkman_Center_Broadband_Final_Report_15Feb2010.pdf; Middle-

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7. Canadian Radio-television and Telecommunications Commission. (2010a).

8. Canadian Radio-television and Telecommunications Commission. (2010b). p. 25.

9. Canadian Radio-television and Telecommunications Commission. (2010b). p. 23.

10. Although cable companies in Canada are required to make their infrastructure available for use by competitive service providers, this is much less common than competitive service provision over DSL infrastructure.

11. This is known as 'service-based competition'.

12. Telecommunications Policy Review Panel. (2006). *Telecommunications Policy Review Panel — Final Report 2006*. Ottawa: Industry Canada, p. 3–35. http://www.telecomreview.ca/eic/site/tprp-gecrt.nsf/eng/h_x00054.html

13. CRTC Telecom Decision 2010-255 allowed Bell and Bell Aliant to charge its wholesale customers (competitive ISPs) usage fees for each end-user (residential broadband customer) whose monthly usage exceeded a set cap. CRTC Telecom Decision 2011-44 confirmed the rates that would be payable by the competitive ISPs and as a result competitive ISPs announced they would be imposing usage caps on their customers. The Stop the Meter campaign (<http://stop-themeter.ca>) very effectively raised public awareness of this issue, gathering almost half a million signatures on a petition opposing usage-based billing. Industry Minister Clement quickly indicated that the government would not allow the decision to stand. As this chapter goes to press in March 2011, the House of Commons Standing Committee on Industry, Science and Technology is studying the issue, and the CRTC has launched a review of billing practices for wholesale residential high-speed access services (Telecom Notice of Consultation CRTC 2011-77).

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16. Telstra (2006). *Operational Separation Plan*. Melbourne: Telstra. http://telstrawholesale.com/dobusiness/customer-commitment/docs/op_sep_plan.pdf.

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18. <http://www.nucleusconnect.com/company.php?navid=2&itemID=2>

19. <http://www.nbnco.com.au/about-nbn-co>

20. See http://www.thealbertasupernet.com/what_is_the_supernet/axias_role.html. The Supernet does not offer connectivity directly to individuals, but Internet service providers can use the Supernet to provide broadband to consumers throughout Alberta.

21. See for example the Part VII application from Electronic Box Inc. to review Telecom Decision 2006-77 regarding third-party Internet access service rates, which resulted in cableco Vidéotron lowering the disputed wholesale rate; Electronic Box (2009). Part VII Application from Electronic Box Inc. To Review Telecom Decision 2006-77 Re Third-Party Internet Access Service Rates. http://www.crtc.gc.ca/PartVII/eng/2009/8661/e42_200914045.htm.

22. This issue was part of the expanded *Proceeding to consider the appropriateness of mandating certain wholesale high-speed access services*, TNC 2009-261. <http://www.crtc.gc.ca/eng/archive/2009/2009-261.htm>

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24. Pilioci, V. (2010). Bell to Appeal CRTC Internet Ruling – Company Must Open Connections to Competitors, Commission Says. *Ottawa Citizen* (2 September). p. D1.

25. Webb, M. (2008). *Breaking up Is Hard to Do: The Emergence of Functional Separation as a Regulatory Remedy*. Paper presented at the 8th Global Symposium for Regulators. p. 8.

26. For a detailed discussion of the nature of competition among Canadian Internet service providers, see Middleton & van Gorp (2009).

27. See Ofcom (2010). *Broadband Competition Reaches New Milestone*. <http://consumers.ofcom.org.uk/2010/09/broadband-competition-reaches-new-milestone/>. (accessed 20 September 2010). The Compare Broadband website lists broadband providers and allows comparisons of their offerings <http://www.comparebroadband.co.uk/home-broadband/>. Searching on a London post-code reveals an extensive list of providers, with a variety of higher speed and lower priced offerings not found in large Canadian cities.
28. Broadband Stakeholder Group (2010). *Broadband Statistics*. <http://www.broadbanduk.org/content/view/272/55/>.
29. DSL2+ services are widely available in Australia and the UK (among other locations). They offer download speeds of up to 24 megabits/second. Competitors offering these speeds are doing so using their own equipment installed in the incumbents' premises. In Canada, very few competitors have their own equipment, thus DSL2+ services are generally only available from the incumbents, who have not made these speeds available on a wholesale basis.
30. Australian Communications and Media Authority (2009). *ACMA Communications Report 2008–09*. Melbourne: Australian Government; *Venture Consulting (2009). Venture Consulting / IIA Broadband Index – Ninth Edition (Q3 2009)*. Sydney: Internet Industry Association. <http://www.iiia.net.au/images/stories/iiia-venture-broadband-index-q3-2009.pdf>
31. Policies promoting competition based on wholesale access to telecom infrastructures are more common in countries where there is a smaller cable footprint, hence the focus has been on incumbent telcos, not cablecos.
32. The CRTC must ensure that its policies are technologically neutral and symmetric (Canadian Radio-television and Telecommunications Commission, 2010b).
33. OECD Directorate for Science Technology and Industry (2008). *Developments in Fibre Technologies and Investment*. Paris: *OECD Working Party on Communication Infrastructures and Services Policy*. <http://www.oecd.org/dataoecd/49/8/40390735.pdf>.
34. See Middleton & van Gorp (2009), on this point. The recent CRTC decision on speed-matching (CRTC, 2010c) requires cable operators to make it easier for market entrants to get wholesale access to cable networks.
35. CRTC (2010c).
36. Despite the name, Internet Protocol TV (IPTV) does not operate over the commercial internet, and incumbents are not required to allow competitors to offer this service over their networks.
37. CRTC (2010c): Opinion of Commissioner Timothy Denton, Dissenting in Part.

Barriers to Competition in Canada's Residential Broadband Internet Market

Annemijn Van Gorp

Although consumers in Canada were among the first in the world to be offered broadband services, in recent years Canada's broadband leadership has declined. Canada's regulatory regime has been unable to stimulate competition in the market to achieve high quality and high speed services available at competitive prices.¹ For example, by the end of 2008, Canada ranked 27th out of 30 OECD countries for average monthly broadband prices per advertised Mbps, and 25th in download speeds². Although OECD rankings at times are contested and do not provide a full picture of market developments, an increasing number of publications in the last couple of years have pointed to Canada's decline in broadband leadership.³ Besides limited service differentiation in the Canadian market, investments in infrastructure upgrades lag behind those in many other countries. Further, while across the globe many governments and private companies are investing in rollout of fiber to the home

(FTTH) networks, in Canada progress is slow. If Canada is to position itself as one of the world's leading knowledge and information societies, innovative service offerings must be brought to market. Stimulating competition is a key component to achieving this goal.

Whereas many countries rely primarily on DSL (Digital Subscriber Line — a broadband technology deployed over traditional copper networks, originally built for telephony services) to provide broadband internet access, Canada stands out because of the availability of two nearly nationwide, fixed broadband infrastructures: 84% of households have access to DSL connections (using the telephone network), and 80% have access to cable broadband.⁴ Only approximately 6% of Canadians do not have access to either broadband infrastructure, but are serviced by satellite or other wireless internet providers.⁵

Even though as many as 500 Internet Service Providers (ISPs) exist (for both consumers and businesses), consumers' choice between ISPs is limited. The Canadian Radio Television and Telecommunication Commission's (CRTC) obligation implemented in the late 90s requires telephone companies and cable companies to provide independent ISPs access to their last mile infrastructures to enable them to offer retail internet services. However, many independent ISPs characterize Canada's broadband market as a "duopoly" between the two. Third Party Internet Access (TPIA) to cable networks, mandated as of 1999, remains limited in most parts of the country. For example, Rogers Communications provides TPIA to only one independent ISP. Numbers show that DSL access by independent ISPs has been more popular. However, these ISPs have been unable to gain significant market share.

Competition through wholesale DSL provision: Resale vs. co-location

For the purposes of DSL provision, third party access to an established telephone company's infrastructure can be through local loop unbundling and bitstream access. With local loop unbundling, a competitor rents copper from the telephone company, and then provides dedicated access to the local loop from the central office (telephone exchange) to the customer's premises. The competitor co-locates in the central office where it installs equipment and deploys its own

transmission system. On the other hand, bitstream access, known more commonly in Canada as resale, does not constitute a dedicated connection, but refers to the reservation of specified bandwidth, and can be provided from the central office or from another interconnection point to which the established telco sends the bitstream service. Given that interconnection may take place at various points in the network hierarchy, bitstream access may come in different forms. The third party provider might only provide the billing system or it might operate its own operational support systems at a local switch (co-location). The amount of investment needed also varies according to the functionalities provided by the ISPs. Co-location requires the most investment. Besides renting space in the central office and significant investments in equipment and insurance, connections back to the main network (backhaul) have to be arranged.

Local loop unbundling became part of the telecommunications framework in Canada in 1997. The mandate was initially for a period of five years, but with only 4% of local loops unbundled by 2000,⁶ co-location rights were extended. Besides initial excessive pricing (as revealed by a CRTC decision to lower regulated prices for access to unbundled local loops by 25–30%⁷), one of the key reasons why independent ISPs in Canada do not co-locate on a large scale is the use of remotes, or “street cabinets”.

Distances from the central office to homes are often long in Canada. It was not a problem for the telephony services for which the central offices were originally built, but DSL services are distance dependent. The longer the distance, the weaker the signal and the slower the speed. Consequently, DSL services cannot always be offered from the central office. To solve this problem, telephone companies have installed street cabinets as interim points from which the DSL service can be delivered to the home. A majority of homes in Canada are currently being served from such street cabinets.⁸ With the physical space constraints presented by these cabinets, added to the fact that telcos typically deny access to the sites, independent ISPs often have no business case for co-location.

As a result, the vast majority of ISPs provide resale (bitstream) services, also known as “wholesale aggregated ADSL services”, to their customers. Independent ISPs typically interconnect to the telephone

network at one single point to have full coverage. For instance, an ISP connected to Bell's bitstream/resale service at a single point in Ontario can provide DSL service to a customer anywhere in Ontario and Quebec. However, the telephone company (in this case, Bell) manages the access network and retains full control over the services delivered. As a result, it is often difficult for ISPs to differentiate their services from that of the telephone company itself.⁹

In an attempt to address this competition barrier, three issues related to control over networks have recently been argued before the CRTC. These include usage based billing, speed matching and internet throttling. In the case of speed matching, telephone companies sometimes offer higher speed services to their own retail customers than to ISPs reselling their services. A recent CRTC decision prohibits this practice.¹⁰ In response, Bell Aliant, Bell Canada and Telus submitted petitions to the Federal Cabinet seeking to have this decision rescinded. The Cabinet ordered the CRTC to reconsider.¹¹ [Editor's update: On August 30, 2010 the CRTC ruled that the major telephone companies must make their wholesale high speed networks available to competitors at speeds that match those offered to their own retail customers.]

The CRTC made a decision with negative consequences for resellers, however, on the issue of usage-based billing. Through usage-based billing, the established players force independent ISPs to apply download caps to their customers.¹² As many independent ISPs do not experience heavy traffic (yet), they believe it would be beneficial to their business if they themselves could determine how much data individual customers are allowed to transfer. [Editor's update: On January 25, 2011, the CRTC ruled that Bell could charge small ISPs based on usage which would have forced the small providers to stop offering unlimited internet packages. On Feb. 3, after a massive public protest launched by OpenMedia.ca, the Federal Government indicated that they would overturn this decision if the CRTC did not reconsider. On Feb. 8, the CRTC launched a review of its regulatory approach to these issues. At print time, this review was still in process.]

A final concern for independent ISPs has been "throttling" — the deliberate slowing down of bitTorrent traffic (a peer to peer file sharing technology). Many types of files can be transferred using this technology. It can be used, for instance, to transfer movies, which

requires lots of bandwidth. In the name of “traffic shaping”, some established players slow down this type of traffic, arguing that this can ‘clog’ the networks thus hampering traffic flow for others.

As with usage-based billing, the members of the Canadian Association of Internet Providers (CAIP) want to make their own decisions regarding traffic management. However, CAIP’s request to the CRTC for Bell Canada to stop this practice was denied. The review of these practices has led to a requirement for all internet providers to be more transparent about their traffic shaping practices to both consumers and resellers.¹³

As a result of these and other market developments, independent ISPs have few opportunities to differentiate their offerings from established telephone or cable companies. Their primary appeal rests on enhanced customer service, technical support, and contractual arrangements for service. For example, sometimes they will waive the long term contracts usually required by telcos and cablecos or they may allow customers to operate servers and to share their connections with others.¹⁴

Stimulating infrastructure investment and choice of service

Given the problems experienced by independent ISPs, and their subsequent negative impact on customer choice, the question remains how to improve the Canadian broadband market. Stimulating both investment in infrastructure while at the same time stimulating choice of service for customers (i.e. differentiated services by ISPs) is a complicated task. Although low tariffs imposed by the CRTC for bitstream services and reduced control by the telephone/cable companies over these services will likely improve differentiated service offerings, it also bears the risk of decreasing incentives for further infrastructure investments.

At the same time bitstream access and local loop unbundling are a means to enable infrastructure investment. The ladder of investment theory¹⁵ suggests that this allows competitors to gradually invest, while at the same time generating revenues by expanding customer base. However, given the situation in Canada, where the vast majority of all competitors are at the lowest rung of the ladder, and where large scale co-location cannot be expected, increasing competition will be difficult.

Towards next generation access networks

Limited competition to date in Canada's DSL market has implications for next generation (higher speed) broadband infrastructure investment as well. Many countries are developing plans to stimulate the rollout of fiber networks, which today is seen by many as the most 'future proof' technology. South Korea, Hong Kong and Japan are global leaders where respectively 31%, 23.4% and 21.3% of residents access the internet through fiber optics technology.¹⁶ The Australian government is planning a US\$31 billion nationwide broadband network bringing fiber of up to 100 Mbps to the door in all but the most remote areas.¹⁷ The European Commission wants internet access speeds of at least 30 Mbps in all its member states by 2020.¹⁸ In Canada however less than 1% of the population is currently being served by fiber to the home (FTTH), and no significant governmental strategy to stimulate the development of such networks has been proposed. To date only Bell Aliant has announced a major fiber project in the city of Fredericton, planning to invest approximately \$50–60 million. Bell Canada and Telus have engaged in small pilot projects but have made no public announcements for commercial rollout yet.

In order to stimulate infrastructure investment as well as to increase the choice of service, it is important that the CRTC and government be more proactive. Given independent ISPs' place at the lowest rung of the investment ladder, new infrastructure rollout cannot be expected to be initiated by these independents, and thus is largely up to the established players. Unfortunately, competition between telcos and cablecos to date has been unable to achieve this.

Perhaps local/municipal government could play a role stimulating infrastructure rollout. Further attention needs to be paid to the various roles government could play — e.g. acting as investor or co-investor, through public-private partnership, acting as infrastructure owner, or as operator.

Although government investment might not be feasible or even desirable, a clear strategy is needed to return Canada to its former position as a global leader in the delivery of internet services.

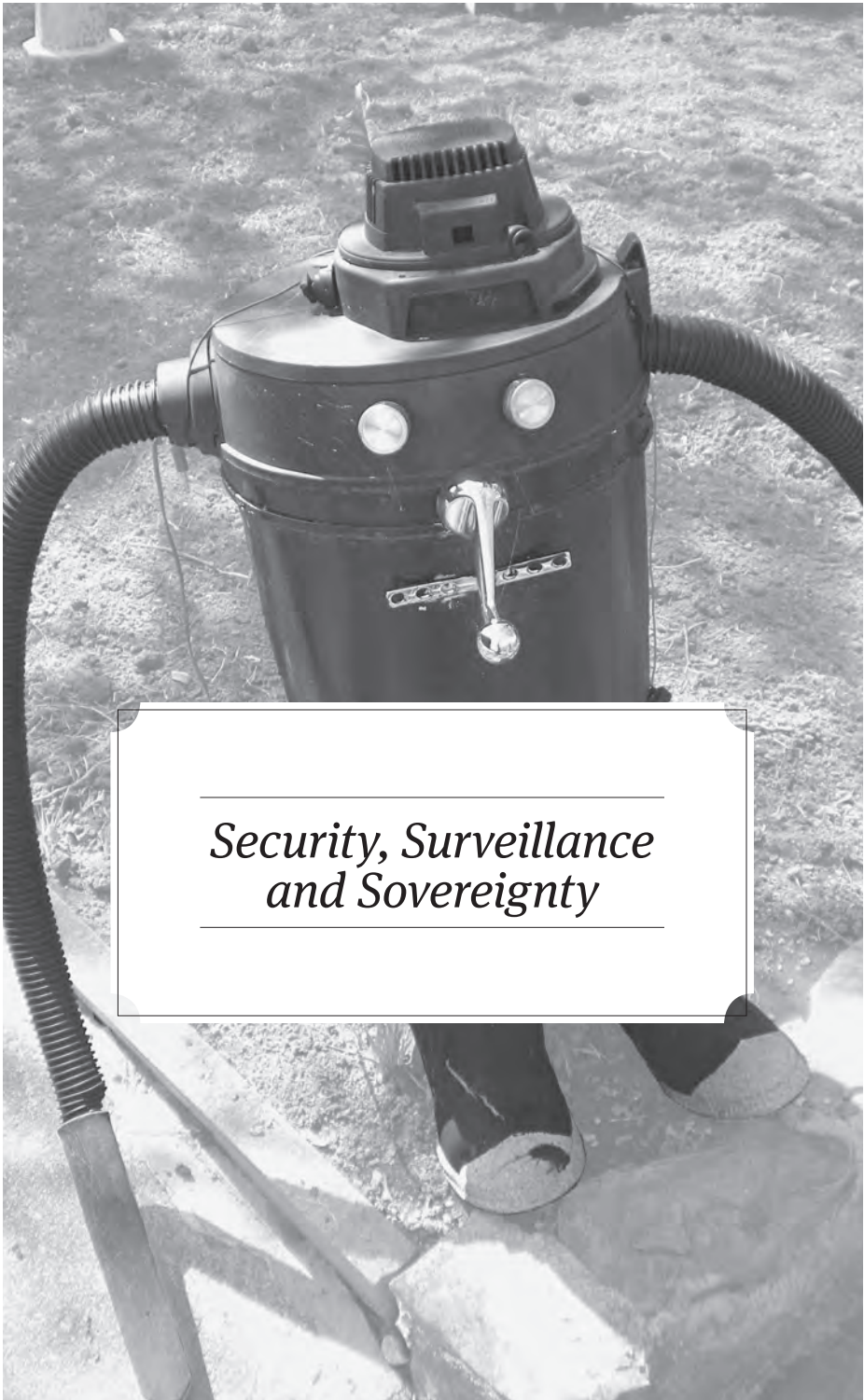
Annemijn Van Gorp received a Ph.D. in Information Sciences & Technology from Penn State University in 2008 and a M.Sc. in Systems Engineer-

ing, *Policy Analysis and Management from Delft University of Technology in 2002*. At the time of writing, she was a post-doctoral fellow at the Ted Rogers School of Management at Ryerson University. Annemijn's research interests are related to telecom policy and ICT for development.

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*Security, Surveillance
and Sovereignty*

Is Your ISP Snooping on You?

Christopher Parsons

In Canada, it is illegal for Canada Post to open our personal mail. While we likely agree that opening a sealed envelope is wrong, what if postal authorities were ‘just’ reading parts of every postcard that was being mailed to and from every person in Canada? Moreover, what if there was the possibility for Canada Post to add advertising messages on the postcards based on what was written to your friend; what if the color of ink used to write the postcard affected delivery speeds; what if Canada Post could track almost every message that you and your friends transmitted to one another?

Similar possibilities for surveillance, inspection, delivery delays, and advertising form a cornerstone of the privacy-related concerns in contemporary Canadian telecommunications policy.

Deeply inspecting packets

When we send messages to one another online, when we browse web pages and send e-mail, our communications are typically *unencrypted*, that is, they are in a form that can be easily read. Unencrypted communications are the digital equivalent of postcards that are sent

along Internet Service Providers' (ISP) networks, such as those belonging to Bell and Rogers. Various federal government agencies are examining how ISPs are using a networking technology, popularly referred to as 'deep packet inspection' (DPI), to inspect Canadians' encrypted and unencrypted data transmissions.

DPI equipment has the ability to read the addressing information of digital communications that flow through ISPs' networks as well as the content of the communications. Together, the addressing information and content compose packets of information that computer applications send to and receive from the internet. Both the address of the packet and its contents can be analyzed using DPI technologies to deliver digital communication to its destination while simultaneously analyzing key facets of its content. This content analysis can identify the application that generated the packet — whether it originated from a file sharing application like BitTorrent or Kazaa, an email client like Outlook, or a web browser like Firefox or Internet Explorer. In some cases it can identify the file that is likely being transmitted — such as a copy of Madonna's *Like a Virgin*, a downloaded copy of James Cameron's *Avatar*, or a .pdf version of Jane Austen's *Pride and Prejudice*. Depending on how the ISPs have configured their DPI equipment, these content analyses are accurate to varying degrees and can analyze both encrypted and non-encrypted data transmissions.¹

Given Canadians' tendency to embrace digital communications, there is a very real privacy concern that arises when telecommunications carriers install equipment that could be used for covert mass surveillance and modification of our communications. It is particularly concerning that this technology can be used to apply rule sets, which are the embedded technological regulations that DPI appliances apply to data traffic, to particular kinds of communications. There is an extensive range of uses for these rule sets; for instance, the speed of peer-to-peer (P2P) traffic, such as that which passes through BitTorrent and Kazaa, can be decreased or stopped altogether, and Voice over Internet Protocol (VoIP) providers, such as Skype, can have their communications quality degraded in favor of a VoIP solution supported or promoted by the ISP. One could experience the static and echoes of cell phones circa 1990 when using Skype, but crisp communications using the ISP's VoIP offerings. Further, using

this technology, advertisements might be injected into web sites on the basis of what the ISP's DPI equipment, in tandem with marketing databases, thinks the user is interested in.

To clarify this, we might return to the packets-as-postcards analogy. Canada Post can't survey the ink color being used in creating your messages (the equivalent of the application generating the packet), delay particular postcards based on where they are purchased (which corresponds to slowing VoIP offered by competitors), or inject particular ads onto postcards based on their content. Canada's DPI-enabled ISPs, however, could theoretically configure their devices to survey applications, delay particular packets, and inject ads. These ISPs have the technical capacity to do what Canada Post cannot.

These are not academic or hypothetical worries, but rather pressing issues in today's global telecommunications market. Many Canadian ISPs already use rule sets to delay P2P traffic based on payload analysis. A summary of these traffic management practices is posted at *christopher-parsons.com*.² The U.S. Federal Communications Commission (FCC) has ruled that American ISPs cannot block third-party VoIP calls.³ Companies in the United States and United Kingdom continue to work towards bringing ad-injections to their respective marketplaces, with one of the U.S. competitors (which is now defunct) having cast an eye towards Canada.⁴ In light of DPI's potential to modify traffic flows, impinge consumer choice, and forcibly modify the user's browsing experience, Canada's ISPs were recently brought before the Canadian Radio-Telecommunications Commission (CRTC) over their use of DPI equipment for internet traffic management practices⁵ and had complaints filed against them with the Office of the Privacy Commissioner (OPC) of Canada.⁶

In response to CRTC and OPC investigations into DPI last year, Canada's largest ISPs presented their arguments for integrating DPI technologies into their networks. Generally, the DPI-enabled ISPs asserted that the technology is meant to mediate internet congestion — the equivalent of too many digital postcards trying to go through the ISPs' delivery networks all at once — and guarantee a high quality of service to their customers while simultaneously improving their customer subscription processes. They argue that particular types of applications, such as those used for P2P file sharing, consume dis-

proportionate amounts of bandwidth, and that such excessive usage negatively impacts the experiences of other customers. Since many applications that transmit and receive data are sneaky — they obfuscate addressing information to confuse ISPs about the content actually carried in the packets — ISPs argue that they must burrow into a packets' content to determine its true application-of-origin. When investigating the content, it is possible to perform sophisticated computational analyses and determine what is sending the data. Such analyses and determinations are possible even if the application has encrypted its content (in effect, shifted from transmitting postcards to sealed envelopes). Algorithmic investigation will often reveal what is generating the data stream (though not its content) and then apply rule sets. Thanks to using DPI in their networks, say ISPs, customers are given an equal experience of the Internet: you won't suffer a degradation of service when the person next door uses a bandwidth-intensive application.

The catch, of course, is that, in performing these computational analyses to improve the customer experience, ISPs are examining private elements of the content that is being transmitted across their networks. This doesn't mean they are reading your e-mail, but it does mean that ISPs' networking equipment is digging into the depths of your communications, finding elements that are useful for traffic management purposes, and then applying their rule sets. This, I suggest, is a ubiquitous form of data surveillance that threatens to have serious impacts on Canadians' expressive privacy.

One way of looking at privacy-related issues is through the impact of persistent surveillance practices on the perceived freedom to speak and associate with others, which is sometimes referred to as 'expressive privacy'. In the case of DPI analyses of electronic data transfers, Canadians' expressive privacy is potentially infringed as a result of persistent communicative surveillance. Judith Wagner DeCew, an American privacy and legal scholar, argues that the "surveillance of normal, everyday activities can lead one to be distracted and feel inhibited."⁷ This is corroborated by Professor Julie Cohen when she warns that "[p]ervasive monitoring of every move or false start will, at the margin, incline choices toward the bland and mainstream." Persistent ISP-level data surveillance thus "threatens

to chill the expression of eclectic individuality, but also, gradually, to dampen the force of our aspiration to it.”⁸ Psychoanalysts such as Donald Winnicott⁹ and R.D. Laing,¹⁰ and surveillance and privacy scholars such as Daniel Solove¹¹ and David Lyon,¹² similarly maintain that persistent surveillance can lead to the chilling of speech and a degraded willingness to engage in free expression. In short, lawyers, sociologists, academics, and psychoanalysts alike concur that the perception of widespread monitoring of personal, private, communications transmissions can be debilitating and should register as a kind of privacy infringement.

Government responses so far

In their recent findings, the CRTC and OPC both addressed some potential privacy worries surrounding DPI.¹³ In the CRTC’s case, it was recognized that the technology is useful for network management and subscriber billing, and that it could be potentially used for advertising and developing detailed awareness of subscribers’ Internet habits. In light of these powers, they directed ISPs “not to use for other purposes personal information collected for the purposes of traffic management and not to disclose such information.” Further, while ISPs are permitted to continue monitoring popular applications that subscribers use and record this information for network management purposes, all such information should be aggregated to afford subscriber anonymity.

The OPC was tasked with investigating whether or not Bell Sympatico, in particular, used DPI technology to “collect and use personal information from its customers without consent,” with the complainant alleging that this collection exceeds the minimal amount of personal information Bell requires to provide internet service to its customers. The OPC found that Bell needed to update the information on their web page to notify consumers of their use of the technology, as well as of their limited and temporary collection of personal information resulting from the association of subscriber numbers and the internet protocol (IP) address assigned to their users.

Thus, while the CRTC and OPC both have begun to etch out what are permissible applications of the technology and how customers

should be notified of its use, we can still learn from some of the responses to DPI in the European Union and United States to extend Canada's protections.

In the face of the potential privacy-invasive uses of DPI technologies, the U.S. House of Representatives' Telecommunications and Internet Subcommittee held hearings into the relationship between DPI and marketing. The committee was deeply critical of DPI-related advertising practices.¹⁴ Partially in light of DPI and similar surveillance technologies, House member Rick Boucher is preparing a bill meant to prevent American ISPs (and other telecommunications companies, like Google and Yahoo!) from using surveillance equipment like DPI to track customers' online activities for advertising purposes.¹⁵ Also, the FCC is looking to establish network neutrality principles but, after suffering a devastating legal setback,¹⁶ must first succeed in classifying broadband providers as providing common carrier services.¹⁷ Principles established following this reclassification of broadband services could limit ISPs' legal ability to unnecessarily inspect and disrupt data transmissions without cause.

In Europe, the European Commission is threatening to bring the U.K. government to court over their willingness to let ISPs use DPI to survey and modify data content in the very near future. The Commission's argument is premised on two points: first, that ensuring "digital privacy is key for building trust in the internet" and second, that British ISPs' use of DPI is non-compliant with provisions of the EU's *Directive on Privacy and Electronic Communications*. It is expected that the only way for the U.K. to escape the Commission's wrath is to change their laws to make future uses of DPI for advertising purposes illegal.¹⁸

The CRTC has begun establishing provisions echoing those of the FCC and EU in their rulings on using DPI for traffic management by limiting the permissible uses of the technology. Further, the OPC has pushed the ball forward in both demanding greater openness of what information DPI equipment collects in Canada and in supporting efforts to increase public awareness of the technology.¹⁹ Neither the CRTC's nor the OPC's responses, however, are as strong as the legislative limitations on privacy-invasive uses of the technology being pursued in the U.S. and that are already codified in the EU.

Rather than be satisfied with the present state of affairs, Canadians should demand continuing progressive legislative efforts to entrench the CRTC's decisions and mediate other potentially privacy-invasive uses of DPI technologies. Policy learning from other Western powers is required given how rapidly the technological landscape shifts. The Canadian government should be applauded if they import privacy-protective measures that further limit privacy-infringing uses of technology which threaten Canadians' expressive privacy and inhibit their constitutional rights to free speech and association.

Chris Parsons is a doctoral candidate in the political science department at the University of Victoria focusing on digital privacy and surveillance issues. He regularly writes about such issues at his website: <http://www.christopher-parsons.com>

Additional resources

Organizational websites

OPC website on DPI: <http://dpi.priv.gc.ca/>

Deep Packet Inspection Canada: <http://www.deeppacketinspection.ca>

EPIC on DPI: <http://epic.org/privacy/dpi/default.html>

[d]packet: <https://www.dpacket.org/>

Papers

Deep Packet Inspection in Perspective: Tracing its lineage and surveillance potentials: http://www.surveillanceproject.org/files/WP_Deep_Packet_Inspection_Parsons_Jan_2008.pdf

NebuAd and Partner ISPs: Wiretapping, Forgery, and Browser Hijacking: <http://www.freepress.net/node/41737>

Digging Deeper Into Deep Packet Inspection: http://www.getadvanced.com/learning/whitepapers/networkmanagement/Deep%20Packet%20Inspection_White_Paper.pdf

Deep packet inspection meets 'Net neutrality', CALEA: <http://arstechnica.com/hardware/news/2007/07/Deep-packet-inspection-meets-net-neutrality.ars>

Modifying the Data Stream: Deep Packet Inspection and Internet Censorship: <http://giganet.igloogroups.org/publiclibr/hyderabad/3rdgiganet%7E2/wagnerpdf%7E2>

Global technology trends and national regulation: Explaining Variation in the Governance of Deep Packet Inspection: http://userpage.fu-berlin.de/%7Ebendrath/ISA09_Paper_Ralf%20Bendrath_DPI.pdf

Disclosure, Deception, and Deep-Packet Inspection: The Role of the Federal Trade Commission Act's Deceptive Conduct Prohibitions in the Network Neutrality Debate: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1516705

Deep Packet Inspection: The end of the internet as we know it? http://www.freepress.net/files/Deep_Packet_Inspection_The_End_of_the_Internet_As_We_Know_It.pdf

This is the way the Internet ends: not with a bang, but DPI: <http://arstechnica.com/tech-policy/news/2009/03/does-deep-packet-inspection-mean.ars>

Notes

1. In a recent study performed by Internet Evolution, we find that DPI equipment can accurately identify applications that generate encrypted traffic (though this identification doesn't extend to the content the application is transmitting). It is relatively easy to update equipment to account for new applications' data traffic. http://www.internetevolution.com/document.asp?doc_id=178633

2. I have composed, and made publicly available, a relatively recent summary based on regulatory documents of major Canadian ISPs using DPI technology. <http://www.christopher-parsons.com/blog/technology/comment-canadian-isps-and-internet-traffic-management/>

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4. Noted in CIPPIC's 2008 filing to the OPC, which is accessible at: http://www.cippic.ca/uploads/CIPPIC_RequestforIndGuidelines-DPI-BehTarg_25July08.pdf

5. Record of the CRTC proceedings: http://www.crtc.gc.ca/Partv11/eng/2008/8646/c12_200815400.htm

6. For documents pertaining to this complaint: <http://www.cippic.ca/index.php?mact=News,cntnto1,detail,o&cntnto1articleid=419&cntnto1returnid=15>

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17. Julius Genachowski, Chairman of the FCC, outlined his proposed redefinition of broadband service providers as common carriers in a speech entitled "The Third Way: A Narrowly Tailored Broadband Framework." The speech is available at: http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-297944A1.pdf
18. Williams, Chris. (2009). "UK gets final warning over Phorm trials," *The Register*. Published October 29, 2009. Last accessed January 3, 2009. Available at: http://www.theregister.co.uk/2009/10/29/eu_phorm/
19. To date, the OPC has launched their own "What is Deep Packet Inspection" website (<http://dpi.priv.gc.ca/index.php/what-is-deep-packet-inspection/>) and supported the creation of Deep Packet Inspection Canada (<http://www.deep-packetinspection.ca/>).

Trading Sovereignty for Surveillance in the Telecommunications Sector¹

Marita Moll

In June 2010, the government released a consultation paper which asked Canadians to comment on the possible impacts of increased foreign direct investment in the Canadian telecommunications sector.² While the paper clearly promoted potential economic benefits, the potential risks, which would not be confined to economic impacts, were absent from the analysis. This article briefly looks at the issue of foreign ownership on the telecommunications sector from the perspective of national sovereignty and security.

Security threats move online

Cyber invasions are a national security threat that cannot be ignored. In 2010, influential world affairs magazine *The Economist* put the issue front and centre. “Cyberwar; The threat from the internet,” read the July 3rd cover. Related articles described an early logic bomb which

blew up a gas pipeline in Siberia and a denial of service attack which crippled government services in Estonia and Georgia at crucial political moments. It noted that power installations and banking systems, both highly dependant on electronic connections, could also be hijacked by malicious software.³ Already on the radar of experts at the time was Stuxnet, an extremely sophisticated form of malware that was attacking Iranian nuclear facilities. Unlike previous internet threats, experts seem to agree that this one could not have been constructed without financial and human resources usually available only to large entities such as nation states.⁴ It's "a working and fearsome prototype of a cyber-weapon that will lead to the creation of a new arms race in the world," declared European digital security company Kaspersky.⁵

Closer to home, Doug Westland, president of an Ontario cybersecurity company that works with North American utilities says that Ontario electrical facilities have been infiltrated by internet hackers for some time. So far, none of these have resulted in a loss of power. But the installation of millions of wireless "smart meters" in Ontario opens up a new potential for cyber attacks. Experts are suggesting that security technology is falling behind in the rush to interconnectedness.⁶

In Canada, our ability to manage these types of threats are surprisingly dependant on the "best interests" of private corporations. To protect their financial interests and keep the networks running smoothly, service providers in the telecommunications sector have adopted technology and security tools that were once the domain of military and space programs. Large Internet Service Providers (ISPs) have, by virtue of their unique capacity to filter malicious content, become a first line of defense against cyber attacks. Bell Canada alone is dealing with over 80,000 "zero day" attacks per day targeting computers on its network.⁷ "Zero day" attacks are attacks not yet known or addressed by computer security experts. ISPs themselves are questioning this evolving but unofficial national security gatekeeper role.

Foreign investment trial and error

With private interests playing such a crucial role in national security, changes in foreign investment rules in the telecommunications industry take on a different light. According to large ISPs, Canadian security agencies are currently not actively involved in network monitoring activities.⁸ Whether or not this model is appropriate is certainly open to question. But there is no question that this would not be an appropriate model if telecommunications companies were owned and controlled in foreign jurisdictions. A brief survey of recent events in the telecommunications sector shows that government policy and decision making is out of step with legislative and regulatory change.

In December 2009, desperate to infuse some competition into the cell phone market and acting against the advice of the CRTC, the government allowed Globalive Communications Corporation to enter the Canadian market with its Wind Mobile wireless services. Globalive is owned by Egyptian-based Orascom Telecom Holdings. Human Rights Watch has recently documented a number of cases of internet repression in Egypt — albeit under the previous regime.⁹

In March 2010, seeking to address the gap between telecom legislation and practice, the federal Throne Speech announced that parts of the satellite and telecommunications industry would be opened to both venture capital and investment from outside the country. Then-industry minister Tony Clement deflected questions saying that any change in policy would “have to be in the net benefit of Canada and have to satisfy the test in making sure it’s consistent with national security.”¹⁰

In February 2011, the Federal Court of Canada ruled that the government had erred in its decision to allow Globalive into the market under the current foreign ownership rules. This decision is now being appealed by both Globalive and the Government of Canada. Meanwhile, Globalive continues to provide mobile services in Canada.

Canadian internet researcher and commentator Jesse Hirsh suggests that protecting national security in this context is used as a blanket term to include anything related to the military, law enforcement, or the intelligence services. “The subtext to that is surveillance,

that foreign companies would be allowed to operate in so far as they allow the state to have the same type of access they already have to Canadian owned and operated networks,” says Hirsh.¹¹ In fact, policy and legislation currently being proposed to address these issues goes both too far (by infringing on personal privacy) and not far enough (by not addressing the issue through a foreign policy lens).

Canada’s new cyber security and surveillance strategies

On October 3, 2010, then-public safety minister Vic Toews launched *Canada’s Cyber Security Strategy*.¹² It offers \$90M over five years and \$18M in ongoing funding to secure government systems, partner with the private sector to secure systems outside of the federal government and help Canadians to be secure online. It recognizes the gap in security caused by reliance on the private sector to deal with cyber threats. It promises to strengthen existing structures and organizations and seeks to establish cross-sector mechanisms so government and industry can collaborate on critical infrastructure issues. These include cyber security and security of process control systems which control critical infrastructure — the kind that Stuxnet was designed to infiltrate. Attempting to strike a balance between the public and private role, the emphasis, in this strategy, is on the shared responsibility of multiple actors. “Everyone must do their part,” says the document.

Canadian security experts were underwhelmed with this strategy. “I think this is not a strategy at all,” said Ron Deibert, director of the Citizen Lab at the University of Toronto Munk School of Global Affairs. “It is more like a tactical stop gap. The fundamental problem with this initiative is that it assumes that we can deal with these problems by focussing on the domestic front, by securing our critical infrastructure here at home....It really misses the important point that the sources of these problems are international, they are beyond Canada’s borders. They are very complex. They have more to do with a wide range of issues that Canada is not dealing with.” Deibert argues for the development of a foreign policy for cyberspace and assertive government engagement on this issue at all levels from the

G-8 to the Internet Governance Forum. “We need to develop a strategy for cyberspace as a whole.”¹³

Meanwhile, in early November 2010, Bills C-50, C-51, C-52 (known as “lawful access” bills) were reintroduced in Parliament. The proposed legislation would give police and intelligence officers the right to intercept online communications and get personal information from ISPs about subscribers without first obtaining a search warrant. It would supply law enforcement agencies with all kinds of new powers to secure information about the nature and content of individual communications. Although suspended due to the dissolution of Parliament, this proposed legislation is about to make a reappearance under the newly elected majority Conservative government.

Privacy advocates have been arguing against interception of communications without a warrant for years, indicating that it tramples on privacy rights. Besides, they argue, the police already have adequate tools to request such information.

“That type of approach is open to abuse, and I don’t think it strikes the right balance,” said Michael Geist, Canada Research Chair in Internet and E-commerce Law at the University of Ottawa. “There is a significant price to be paid, and sadly, scant evidence that a) we’ve got a problem, and b) that this is going to do very much about it.”¹⁴

Tell us what our choices really are

Protecting national security by combating terrorism, including cyber threats, is one of the reasons given for enhancing law enforcement powers, but it must be balanced with respect for the rights of all Canadians. As we have seen since the terrible events of 9/11, individual rights can be quickly subsumed under the blanket of national security. Safeguarding the line between spying on citizens or denying access to communications tools and legitimate law enforcement activities requires constant vigilance. When issues arise, citizens and their elected representatives must have the tools to manage change in a way that protects the national interest.

Among those tools is section 7 of *The Telecommunications Act* which affirms that telecommunications is a strategic industry that

performs an essential role in maintaining Canadian identity and sovereignty. It identifies government as a key player in the development of a telecommunications system that “serves to safeguard, enrich and strengthen the social and economic fabric of Canada and its regions”. Among the objectives of telecommunications policy identified in section 7 are to promote the ownership and control of Canadian carriers by Canadians; and to promote the use of Canadian transmission facilities for telecommunications within Canada and between Canada and points outside Canada. Section 7 also makes the protection of personal privacy one of the objectives of telecom policy.¹⁵

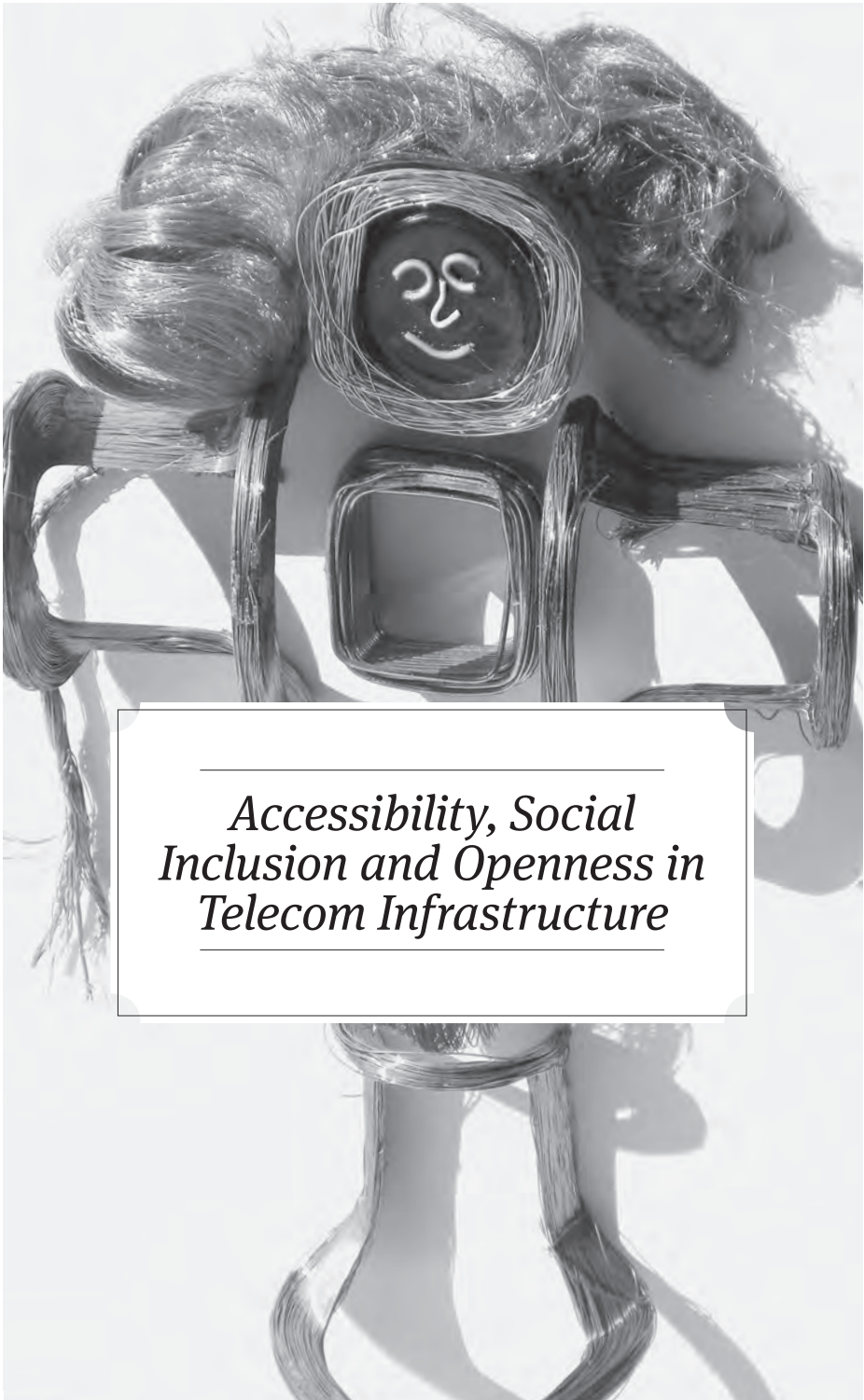
This is a key piece of legislation that defines the Canadian communications landscape. By making a clear connection between telecommunications, sovereignty, security and, privacy, this is one of the legislative instruments that gives citizens a platform from which to hold government accountable on telecommunications issues. When it was enacted, majority Canadian ownership was considered to be an essential part of this equation. The new threats to security from online sources would seem to make this requirement more essential than ever. It must not be changed by stealth or by fiat. Canadians need to be fully informed about the choices and their repercussions.

Marita Moll is a CCPA research associate and a Board Member of Telecommunities Canada. She was a co-investigator with the Canadian Research Alliance for Community Innovation and Networking (CRACIN). She is also a member of the Trade Justice Network.

Notes

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*Accessibility, Social
Inclusion and Openness in
Telecom Infrastructure*

Basic Service at the Crossroads

Will Universality be Saved?

Michael Janigan

The advances in telecommunications made over the last two decades have given service providers high levels of confidence in dismissing the need for consumer protection and minimum levels of service. Four years ago, the big telephone companies wheedled a Policy Direction out of an over-matched Industry Minister Maxime Bernier that made deregulation a priority for the regulator, the Canadian Radio-television and Telecommunications Commission (CRTC), against which all other objectives had to be justified. After dismantling many areas of former consumer protection, including a jaw-dropping conclusion that competition in local telephony should be sufficient to defend service quality, the Commission now has in its sights the touchstone of public interest in telecommunications, the concept of basic service. Hearings will take place in 2010 to examine the viability of the concept in light of technological and regulatory developments.

Before any quick march away from past practice is attempted, it would be useful to review how the concept of basic service became established as a desirable public goal. The idea of basic ser-

vice and the basic service objective is intrinsically bound up in the well-known concept of universal service. Universal service has been described as follows:

Universal Service is concerned with the making available of the provision of a certain defined set of telecommunications services as widely as possible, both geographically and socially.¹

It is appropriate to note that the term universal service was brought into the regulatory telephony parlance by Theodore Vail, the Chairman of AT&T, in 1907. Vail advanced the acceptance of a policy that service would be extended to anyone in a particular area by a provider that was guaranteed to be the sole service provider in that area. For Vail, universal service was just good business, and was advertised with the corporate slogan, “One Policy, One System, Universal Service”.

However, in the United States, where the phrase originated, the concept of universal service continued to evolve to include the idea that the service must not only be accessible, but feature affordable rates. As well, there would be subsidies to subscribers in high cost regions, or to guarantee attachment to the network for disadvantaged groups or important public purposes. The *Telecommunications Act of 1996* provided a statutory foundation for universal service. While it was not defined, the Act recognized universal service as an “evolving level of telecommunications services”, the delivery of which would meet the following objectives:

- Promote the availability of quality services at just, reasonable and affordable rates for all consumers;
- Increase nationwide access to advanced telecommunications services;
- Advance the availability of such services to all consumers, including those in low income, rural, insular, and high cost areas at rates that are reasonably comparable to those charged in urban areas;
- Increase access to telecommunications and advanced services in schools, libraries and rural health care facilities;

- Provide equitable and non-discriminatory contributions to the fund supporting universal service programs from all providers of telecommunications services.

There are programs established by the Federal Communications Commission (FCC) in furtherance of the goals set out above that are funded by the Universal Services Fund (USF) as directed by the legislation. The USF provided some seven billion US dollars in 2007 in support of connectedness for low income customers, remote customers, rural health care and school libraries. The *Telecommunications Act of 1996* also provided that contributions were to be made to the Universal Services Fund from all providers of interstate telecommunications services.

The reasons behind this policy and its implementation were summarized a decade ago in an FCC Further Notice of Proposed Rulemaking:

The absence of telecommunications service in a home puts its occupants at a tremendous disadvantage in today's society. Parents cannot be reached when urgent situations arise in school. Job seekers cannot offer prospective employers a quick and convenient means of communication. People in immediate need of emergency services cannot contact police departments, fire departments, or medical providers. In short, telephone service provides a vital link between individuals and society as a whole. Given the importance of telephone service in modern society, it is imperative that the Commission take swift and decisive action to promote the deployment of facilities to unserved and underserved areas and to provide the support necessary to increase subscribership in these areas.²

The initial foray of Universal Service funding into more comprehensive telecommunications services than Plain Old Telephone Services (POTS) was by way of internet access for school libraries. This was followed by a 2006 report from the FCC's Consumer Advisory Committee recommending an explicit expansion into broadband, funded by the USF and provided in a competitively neutral fashion in conformance with the dominant technology in urban areas.

In 2009, President Obama and Congress gave the FCC a new mandate to complete in the effort to make broadband, or high speed ac-

cess to the internet available to all Americans. The effort required the FCC to develop a forward-looking national broadband plan to ensure that all Americans have access to broadband capability. The new mandate also provided US\$7.2 billion in grants, loans, and loan guarantees to hasten roll-out of the facilities needed to provide broadband and educate consumers on how to use this infrastructure. In July 2010, the FCC produced the plan that called for four general ways, with accompanying comprehensive recommendations, for all relevant governments and agencies to contribute. These required such decision makers to:

- Design policies to ensure robust competition and, as a result maximize consumer welfare, innovation, and investment;
- Ensure efficient allocation and management of assets government controls or influences, such as spectrum, poles, and rights-of-way, to encourage network upgrades and competitive entry;
- Reform current universal service mechanisms to support deployment of broadband and voice in high-cost areas; and ensure that low-income Americans can afford broadband; and in addition, support efforts to boost adoption and utilization;
- Reform laws, policies, standards and incentives to maximize the benefits of broadband in sectors government influences significantly, such as public education, health care and government operations.³

The FCC will also quickly publish a timetable to implement plan recommendations within its authority and monitor and publicize plan progress.

The addition of broadband to a level of telecommunication services that may be required to establish universality has also been undergoing examination in the European Community. On September 17, 2009, Commissioner of Competition, Nellie Kroes announced that the European Commission had adopted guidelines on public funding of broadband services. The guidelines provide for a classification of needs based on the existing country conditions to establish when public money can be used to extend broadband coverage by serving

areas where private operators do not exist, or where broadband services are inadequate.⁴ The guidelines are in furtherance of the policy that “all Europeans must have access to high speed broadband”.⁵

In Canada, the CRTC previously has affirmed that one of its objectives was to determine how best to ensure that local service remains accessible and affordable in compliance with the objectives set out in sec. 7 of the *Telecommunications Act*.⁶ In so doing, the obligation to serve was formalized as the cornerstone of such universal service objectives,⁷ and the contents of the basic service specified.⁸ This included:

- individual line local service with touch-tone dialing, provided by a digital switch with capability to connect via low speed data transmission to the internet at local rates;
- enhanced calling features, including access to emergency services, Voice Message Relay service, and privacy protection features;
- access to operator and directory assistance services; access to the long distance network; and
- a copy of a current local telephone directory

The Commission noted then that the basic service objective is independent of the technology used to provide service, and may change over time as service expectations evolve. In order to ensure that the current Canadian framework for universal service was complete, a contribution based on revenues from service providers was established to fund high cost serving areas.^{9,10}

We thus have the existing framework of our current universal service obligation in Canada that consists of delivering basic service to everyone in a serving area. Basic service is currently defined as a form of local land line service with touch-tone dialing, as explained above, and where necessary, contribution from overall revenues is made available to enable the delivery of the basic service outlined.

Future universal service

There has clearly been some erosion of the centrality of the local land line service identified as basic service in Decision 99-16.¹¹ There may well be other means than the current basic service formula to meet the connectivity needs described by the FCC. At the same time, broadband service has become an important network for the delivery of a wide range of services including telephony. The fact that a different network or technology may now be required to meet the societal needs associated with the original basic service objective does not mean that the concept of universal service has become irrelevant. The experience in the United States and Europe seems to point to a conclusion that the universal service objective requirement can require additions without being subversive of the overarching objective.

There is a strong economic case for the continuation of a universal service obligation in a market where changing technologies are altering the mechanisms whereby basic service, or the needs served by basic service, can be delivered. This is partly because of the externalities associated with the provision of universal service. These externalities include the well-known principle that the greater the size of the network, the greater the benefit to other users of the network. But such externalities may also include economy-wide benefits such as reduction of transportation needs and better and more efficient access to commerce. These externalities may justify departure from a market approach to interconnection on economic grounds alone.

It is also clear that the traditional mechanisms for maintaining and financing the universal service obligation, primarily through an obligation to provide basic service in the form of single land line telephony, cannot be the principal means of maintaining and financing universal service in the future. The same regulatory bargain that drove the establishment of universal service provided by the incumbent monopoly provider is no longer in place.¹²

There now exists considerable public policy support for a universal service obligation that includes broadband. The Canadian government's National Broadband Task Force in 2001 recommended an action plan that would have seen access to broadband in all Canadian communities by 2004.¹³ The Telecommunications Review Pan-

el Report of 2006 urged the creation of a national strategy for adoption of ICTs, noting the effect of improved broadband connectivity as “a prime means of spreading the social and economic objectives of information technology”.¹⁴ It too recommended that government “immediately commence a program to ensure that affordable and reliable broadband services are available in all regions of Canada, including urban, rural and remote areas, by 2010 at the latest.”¹⁵

But while the goal of broadband connectivity seems congruent with the goals of a universal service objective, there is much to be determined as to the appropriate mechanism for its achievement. The inclusion of broadband in the universal service objective with concurrent obligations to serve must be done in an efficient manner, with technology that is at least cost, and in a framework that is competitively neutral.

However, there are powerful industry stakeholders, backed by Bernier’s Policy Direction, who insist that the market is delivering all that is required save perhaps for a public subsidy of service to uneconomical rural and remote areas. Apart from the cheerleading contained in the Policy Direction, there is little evidence that a reformed universal service objective could be met by market forces alone.

The Canadian broadband market is largely a duopoly maintained by the incumbent local telephone service provider and the cable company. Independent studies appear to confirm that the duopoly characteristics of the market have likely led to underachievement in the area of price and performance.¹⁶ It is surely misplaced optimism to believe that this market could adequately serve vulnerable and disadvantaged Canadians when its record with consumers as a whole is ambiguous at best.

It seems reasonable that a basic service requirement within the context of a universal service objective must be reviewed to adapt the highly relevant concept of universal service to current technological, market and societal conditions. And while a plethora of difficult choices exist to determine issues such as the level of service and price, it is important that well established concepts of universality are not discarded like old technology.

Over a decade ago, telecommunications author Professor Heather Hudson, then of the University of San Francisco, advanced a set

of strategies to meet the universal service objective (USO) through the USF which embody the chief principles of a well designed plan:

- Accessibility — Facilities and services must be available to the widest range of citizens possible. Such access should be afforded in rural and remote areas and to all income levels;
- Equity — There should not be major variations in availability and price depending on location in the country, and the service provider;
- Connectivity — Universal connectivity of facilities and services must be mandated;
- Flexibility — The ability to introduce new services and technologies to meet the USO¹⁷.

After the public hearings slated for October of 2010 are completed, the CRTC will be likely faced with a choice of reliance upon the self interest of industry stakeholders to provide for future essential public communication objectives, or a plan that mandates the alignment of the relatively few private providers with broadly accepted goals. It may be a choice that determines Canadian economic and social outcomes well into this century.

UPDATE: The CRTC released Telecom Regulatory Policy CRTC 2011-191 on 3 May 2011. The CRTC set a “universal” broadband speed target for 2015 of 5 Mbps download, 1 Mbps upload (actual speeds, not those advertised) and noted it would monitor progress towards these speed targets. However, there was no indication that such monitoring would be made public nor that any particular action would be taken if the targets were not met. Crucially, the Commission relied wholly on market forces and targeted government subsidy to achieve broadband roll-out. Despite submissions from consumer groups and some service providers, the CRTC refused to create a fund for broadband access.

Turning to telephone service, while the CRTC did not declare there was no longer a general obligation to serve, the CRTC refused to enlarge the basic service objective (BSO) to include broadband and in fact eliminated the BSO in forborne exchanges. This means local telephone service customers no longer have a right to a free white pages directo-

ry, capability to connect to the internet via a dial-up connection and possibly other enhanced calling features, including access to the long distance network. The CRTC also declared wireless access to be equivalent to wireline access in forborne exchanges. The CRTC however retained a “standalone” local telephone regulated rate that the incumbent local exchange carriers (ILEC) have an obligation to provide upon request but allowed both the standalone rate and the regulated telephone rates in rural and remote exchanges to rise to \$30 a month within 3 years and thereafter to rise by the rate of inflation. All of these decision points appear to undermine efforts to modernize universal access to telecommunications in Canada in an age of broadband connectivity.

Michael Janigan is the executive director and general counsel of the Public Interest Advocacy Center (PIAC). He is based in Ottawa. For more information see: www.piac.ca

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Net Neutrality in Canada

Closing in on Internet Openness

Steve Anderson

In 2001, when a group of journalists, writers, artists and activists from across Canada decided to start a new independent media project called Rabble.ca, they did not need to ask for permission from big media or big telecommunication companies. They were able to bypass traditional barriers to entry in the media market because the internet provides an open platform that enables such permission-less innovation. This openness is what makes the internet such a hotbed for free expression and social change. The internet was designed to offer a 'level playing field' for all users, where Internet Service Providers (ISPs) respect the core principle that preserves the integrity of an open network, known as *network neutrality*.

Net neutrality stipulates that ISPs do not manipulate or interfere with online content or traffic thereby helping to ensure that the internet remains a neutral, non-discriminatory space. Essentially, net neutrality is a telecommunications policy principle that secures the internet as an open space and protects our ability to direct our own online activities.

Since early 2008, if not before, some Canadian ISPs began moving away from operating their networks based on net neutrality princi-

ples. By taking control of traffic, dominant ISPs can potentially profit from charging for priority distribution, while also deflating competition from independent cultural producers and other competitors who use the open internet to cheaply distribute their content and services. If the dominant ISPs have their way, media producers, online entrepreneurs and social change makers will need to ask the main service providers—Bell, Rogers, and other large ISPs—for permission and in turn pay large sums of cash to effectively distribute content or innovate. If we do not save internet openness we'll never even hear about the next Rabble.ca.

The origins of net neutrality

ISPs can potentially act as online traffic ‘gatekeepers’ because the internet infrastructure is owned and controlled largely by a few telecommunication corporations with limited public accountability. Until recently the regulator of telecommunications in Canada, the Canadian Radio-television and Telecommunications Commission (CRTC), has had a mostly hands-off approach with the telecom industry. Largely free from the obligations of public service, or market competition, the dominant ISPs are attempting to pull away from the principle of net neutrality. Net neutrality is a principle based on historic “common carrier” telecommunication regulation. Common carriage rules stipulate that telecommunication networks provide access to communication infrastructure on a neutral basis. These regulations were initially applied to the railway and stipulated that owners and operators could not discriminate against cargo based on its owner or destination.¹ They thus served to create a level playing field for cargo companies.

Canadian common carrier rules also have roots in the early 20th century when telegraph companies were network service providers somewhat similar to current ISPs. Because of a lack of industry regulation and oversight, news services were dependent upon the two existing telegraph companies for distribution. The telegraph companies were also involved in the provision of news and were able to charge punitively high rates to rivals and sometimes refuse service. The leading telegraph corporation at the time argued that rates

charged for its services were not within legitimate regulator territory.² The Canadian telegraph regulator at the time, the Board of Railway Commissioners (BRC), rejected these claims and the telegraph companies were then compelled to treat all news services equally. Later, the BRC prohibited Bell from denying network interconnection to third parties (competing companies). During this period of strong public interest regulation, the number of telecommunication providers went from about 600 to 1,695.³

There are clear ebbs and flows in the preceding Canadian communication regulation history, but a high point can be found in one of the first statements from the CRTC after assuming authority for telecommunications regulation in 1976:

The principle of 'just and reasonable' rates is neither narrow nor a static concept. As our society has evolved, the idea of what is just and reasonable has also changed and now takes into account many considerations that would have been thought irrelevant 70 years ago when regulatory review was first instituted. Indeed, the commission views this principle in the widest possible terms, and considers itself obliged to continually review the level and structure of carrier rates to ensure that telecommunications services are fully responsive to the public interest.⁴

Bell tried to dodge this CRTC oversight by arguing that carriage was not within the purview of the CRTC. The CRTC forcefully disagreed. In a conflict between mobile communication equipment manufacturers and Bell, the CRTC was wary of the 'system integrity' arguments used by Bell, concluding that refusing network connectivity related to Bell's disinterest in real competition and thus was unjust and discriminatory.

Much of this orientation towards assertive public service regulation faded in the 1980s, in part due to multi-national trade agreements and an increased market oriented approach to regulation at the CRTC. One of the most important decisions came in 1999 when the CRTC decided against regulating internet service provision, opening the door to possible traffic shaping by ISPs.⁵ Traffic shaping is an internet traffic management practice (ITMP) which controls the amount of traffic in order to optimize performance.

Some of the worst discordances with net neutrality have occurred in Canada. According to Michael Geist, the Canada Research Chair in Internet and E-commerce Law at the University of Ottawa, these ISPs already have a recent “history of blocking access to contentious content (Telus), limiting bandwidth for alternative content delivery channels (Rogers), and raising the prospect of levying fees for priority content delivery.”⁶ During the Telus employees strike in 2005, the corporation blocked access to a website run by striking Telus employees called “Voices for Change” (and at least 766 other websites).⁷ Rogers and Bell have also admitted to limiting peer-to-peer (P2P) applications (freely available internet file sharing systems). In response to customer concerns, Bell (ISP) recently admitted that they “are now using ‘Internet Traffic Management’ to restrict applications that are using a large portion of bandwidth during peak hours. Some of the applications include the following: bitTorrent, Gnutella, Limewire, Kazaa...”. Rogers (ISP) have gone so far as to forcibly display its own message about data limits on top of websites being viewed by its customers. In this case, we have an ISP imposing messages onto our users’ online travels. In response to public outcry, Rogers Vice-President of Communications, Taanta Gupta said “we’re trying different things, and we’ll test customer response.”⁹

A movement for open media

While the open internet movement in Canada has been slower to assemble than in the U.S., net neutrality has now been hotly debated both in the press and in Parliament. The CRTC gave into public pressure and took up the issue in a week-long public hearing held in July 2009.

In the early spring of 2008, a string of events sparked the movement for an open internet in Canada. First, net neutrality was highlighted as a public issue in March 2008 when an all-party Committee on Canadian Heritage report recommended the CRTC create rules guaranteeing net neutrality.¹⁰ Soon after, the net neutrality debate was fully ignited when it was revealed that Bell Canada’s “throttling” of traffic (an ITMP that slows down broadband access for certain users to alleviate network congestion) was limiting people’s ability to view the Canadian Broadcasting Corporation’s (CBC) hit show “Can-

ada's Next Great Prime Minister". Some claimed it took over a day to download the show. In effect, Bell's throttling was limiting CBC's ability to fulfill its mandate to serve Canadians using the most "appropriate and efficient means." Weeks later, it was revealed that Bell Canada was also throttling traffic passing through its network from third party independent ISPs (their competitors).

Shortly thereafter, the Canadian Association of Internet Providers (CAIP) made a submission to the CRTC demanding an end to throttling of third party traffic. CAIP raised a number of concerns with Bell's traffic-shaping practices. Describing the quality of service as "degraded beyond recognition", they argued that by providing third-party businesses with limited internet service, Bell could limit competition in the market.¹¹

The conspicuous activities of Bell Canada and other dominant ISPs sparked a national movement and the launch of the "SaveOurNet.ca coalition" consisting of public interest groups, labour, businesses and individuals. In the months preceding the events detailed above, the SaveOurNet.ca coalition began providing information about the issue of net neutrality, rallied the public to support the CAIP submission, and helped organize a net neutrality rally on Parliament Hill in May 2008.

Following these demonstrations both New Democratic Party (NDP) and Liberal Members of Parliament put forth private members bills in support of net neutrality. Providing further evidence that the open internet movement had gained traction, Konrad von Finckenstein, Chairman of the CRTC, made a speech on June 17th to the 2008 Canadian Telecom Summit, where he said with respect to net neutrality: "Fundamental issues of technology, economics, competition, access and freedom of speech are all involved...it is one of the polarizing issues of the day. It will have to be addressed and debated by all of us."¹²

On November 20, 2008, the CRTC rendered their decision in the CAIP proceeding; they effectively ruled that Bell could continue to throttle independent ISPs who interconnect with its network. The ruling limited competing ISPs from offering differential services, including provision of access to the open internet.¹³ The CRTC concurrently announced a "Traffic Management" hearing on net neutrality for July 9, 2009.¹⁴

For open internet advocates the Traffic Management hearing provided a focal point and sufficient time to organize movement building and a viable policy intervention strategy. In 2009, there were SaveOurNet.ca “Open Internet Town Hall” events in four cities, and over 12,000 citizen comments calling for net neutrality were sent to the CRTC. Formal submissions sent to the CRTC were overwhelmingly in favour of net neutrality, with stakeholders ranging from consumer groups (the Public Interest Advocacy Centre), labour (the National Union of Public and General Employees), cultural groups (the Alliance of Canadian Cinema, Television and Radio Artists) and domestic and international businesses (Zip.ca, Open Internet Coalition). OpenMedia.ca (then called the Campaign for Democratic Media/CDM) and the Canadian Internet Policy and Public Interest Clinic (CIPPIC) made a submission including support from one of the original architects of the internet, Dr. David Reed of MIT; and network experts Dr. Andrew Odlyzko of the Minnesota Internet Traffic Studies (MINTS) project, and Bill St. Arnaud, then Chief Research Officer for CANARIE Inc., Canada’s advanced internet development organization.¹⁵

On October 22, 2009, the CRTC issued its ruling on traffic management. They decided to adopt new traffic management guidelines resembling some of the rules suggested by CIPPIC/OpenMedia.ca, the Open Internet Coalition and others. However, while the traffic management ruling is a huge milestone in the effort to keep Canada’s internet open, several ISPs continue discriminatory traffic throttling practices. The CRTC guidelines put the onus on citizens to file a complaint and to prove that ISPs are “unjustly” throttling traffic as defined by the guidelines.¹⁶

Furthermore, while political support for net neutrality has grown rapidly, there is still no indication that a net neutrality law is imminent. While both the NDP and the Liberal Parties have come out in favor of net neutrality legislation, the Conservative Party is the only main political party that has yet to express support for net neutrality principles in general.¹⁷ These positions were detailed in SaveOurNet.ca’s report, *Internet Openness: Where Do the Parties Stand?*, which garnered much press attention.¹⁸ Consequently, it is still imperative for open internet advocates to maintain pressure on the CRTC and elected officials to ensure that internet traffic is treated equally. Net neu-

trality supporters will need to push the CRTC to enforce its own traffic management guidelines by either submitting a formal traffic management complaint or convincing industry minister Paradis to mandate regular compliance audits of ISP traffic management practices.

There has been some good news, however. The CRTC ruled in Summer 2010 that the Internet Traffic Management Practices (ITMP) policy as laid out in the Telecom Regulatory Policy will apply to mobile wireless data services.¹⁹

Conclusion

If ISPs defy net neutrality without repercussion, we could end up with a much more centralized communications system. While the reaction to traffic throttling has not been as swift or as strong in Canada as in the U.S., a diverse array of civil society organizations, labour groups, businesses and individuals are intervening in the policy process, calling for an open, neutral internet. Recent traffic management decisions by the CRTC suggest that this collection of social actors can effectively coalesce into a force that can override the financial wherewithal and political savvy of the dominant ISPs. Whether or not the positive momentum on the side of open internet defenders can lead to binding legislation or even enforcement of the CRTC guidelines remains to be seen.

Steve Anderson is the founder and current national coordinator of OpenMedia.ca. Steve writes a monthly syndicated column called "Media Links". More about Steve at: <http://openmedia.ca/SteveAnderson>

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Spectrum Policy

Squandering the Digital Dividend?

Graham Longford

Introduction

The radio spectrum is an invisible but vital medium for communication and the transmission of information and culture using wireless telecommunications and broadcasting. As such, its importance to our communication and cultural rights as citizens can scarcely be overstated — i.e. spectrum *matters*. The radio spectrum is valued by other interests as well, however, with the private sector prepared to pay billions of dollars for the right to exploit it for profit, and cash-strapped governments tempted to sell it off to the highest bidder. Demand for spectrum is increasing with the development of new wireless technologies and services, thus we have entered a period of more intense commercial, regulatory and political conflict over who will have access to it, under what conditions, and whose economic and social interests the spectrum resource will be harnessed to serve.

Already the battle for spectrum is heating up, with major Canadian telcos and cable firms like Bell, Telus, Rogers and Videotron,

along with new foreign players like Globalive, fighting over prime spectrum real estate.¹ Aiding and abetting the battle for spectrum is Industry Canada, which has been inflating the price of spectrum through a series of spectrum auctions, which were first introduced in 1996. The federal Conservative government, meanwhile, is paving the way for more foreign ownership of Canada's airwaves by, among other things, over-ruling a 2009 CRTC decision blocking the launch of the Egyptian-owned *Wind Mobile* cellular brand in Canada, and announcing its intention to lift foreign ownership restrictions in the telecommunications sector.²

While billed as necessary in order to increase competition, empower consumers and improve telecommunications services in Canada, such developments constitute a threat to our communications and cultural sovereignty by abandoning our longstanding view of the radio spectrum as a public good for the benefit of all in favour of its enclosure and exploitation for profit by a few wealthy and powerful interests, including ones with no real ties to the country.

Spectrum basics: Technology and regulation

The radio frequencies (3Hz–30GHz) are part of the larger electromagnetic spectrum that includes visible light, microwaves, ultraviolet light and x-rays. The properties of the radio frequencies allow them to carry and transmit information from one point to another, properties that today support assorted devices and services taken for granted in our daily lives — e.g. cell phones, radios, TVs, laptop computers, cordless phones, baby monitors and garage door openers.

The Government of Canada manages and regulates the use of the electromagnetic spectrum as a finite public resource. Sec. 5 of the *Radiocommunication Act* empowers the Minister of Industry to set spectrum policy and regulation, including the allocation of spectrum and the issuing of licenses. Industry Canada regulates the use of spectrum by awarding licenses for the use of certain frequencies on an exclusive basis. License-holders must meet certain conditions set out in their licenses and are subject to periodic review.

Historically, prime spectrum in Canada has been reserved for industry and government use, such as the allocation of large swaths of

spectrum to television broadcasters. In fact, roughly 98 % of all radio spectrum in Canada has been set aside for use by industry and government (the latter includes military, aerospace, marine, national security, public broadcasting and emergency response applications). Much of the licensed spectrum allocated for telecommunications applications lies in the hands of a few major incumbent telcos and cable/wireless firms, including Bell Canada, Telus, Rogers and Quebecor. Recent auctions of new spectrum have tended to favour large incumbents, with only a few new entrants succeeding in securing new spectrum for the introduction of competitive services.³

Exploding use of wireless devices, location-based services, and multimedia applications in the last decade, e.g. smart phones and wireless broadband, has increased demand for high quality spectrum. Most observers agree that the quantity of spectrum currently allocated to telecommunications applications in Canada is insufficient to meet the demand for new products and services, and that the concentration of licenses in the hands of a few dominant firms stifles the kind of competition and innovation that would benefit consumers.⁴ Canada also lags behind most industrialized nations in the deployment and penetration of mobile telephony and other wireless services, while our markets in wireless services are uncompetitive and consumer prices high.⁵ The release of additional spectrum for advanced wireless services is an essential condition for the entry of new wireless telephony and broadband providers to challenge the dominant firms, increase consumer choice and lower prices. Additional spectrum is also required to meet the needs of under- and unserved communities in rural and remote areas, many of which are served by a single cellular provider and remain without access to broadband Internet.⁶

Auctioning the airwaves: Industry Canada and the clearance of the spectrum commons

Recent developments in spectrum allocation and licensing in Canada offer a mixed outlook for addressing the needs of Canadians. While technological developments, such as the transition to digital television, promise to free up much-needed spectrum that could

benefit citizens and consumers, recent policy and regulatory decisions affecting spectrum allocation and licensing in Canada threaten to exacerbate the situation. Since the mid-nineties the federal government has relied increasingly on spectrum auctions as the primary mechanism for allocating spectrum licenses, as part of a broader shift toward market forces in telecommunications regulation (and as a means to raise revenue in times of fiscal restraint). Industry Canada has conducted seven spectrum auctions since then, raising almost \$6 billion in revenue for the federal government.⁷

From a public interest perspective spectrum auctions have been criticized for a number of reasons, not least of which is their tendency to encourage the concentration of spectrum ownership in the hands of deep-pocketed incumbent carriers. By encouraging the inflation of spectrum prices, auctions place spectrum beyond the reach of potential new entrants who cannot match the resources of major incumbents. Consumers are hurt in the process, as the concentration of spectrum ownership undermines competition, keeps prices high and discourages the development of new services.⁸ Spectrum auctions also encourage the development of property rights in spectrum, which runs counter to the longstanding view of spectrum as a *public resource* to be managed for the benefit of all.⁹ Governments, meanwhile, have little incentive to abandon spectrum auctions that have netted them billions of dollars in revenue in recent years, prompting one commentator to quip that spectrum auctions have become the fiscal equivalent of “crack cocaine”.¹⁰

The results of Canada’s most recent spectrum auctions bear out such public interest concerns. Spectrum auctions held in 2004 and 2005, for example, resulted in the issue of over 800 licences, 458 of which were won by Bell, Rogers and Telus alone. Together, these three firms spent \$56 million for spectrum licenses, over five times more than all other license winners combined.¹¹ The only thing standing in the way of the incumbents utterly dominating the auction was the imposition of a 100MHz “aggregation limit” on the amount of spectrum that a given licensee could hold. The 2008 Advanced Wireless Services (AWS) auction, meanwhile, produced a similar concentration of licenses in the hands of a few major incumbents, with Bell, Telus and Rogers winning two thirds of those available and, togeth-

er, bidding in excess of \$2.6 billion. The only bright spot in the AWS auction was the inclusion of a spectrum “set aside” in the auction rules, according to which 40MHz of spectrum was reserved for new entrants to bid upon.¹² Thanks to the set-aside provision, Canadians will have one additional national carrier to choose from among their existing (and very limited) options, namely, Globalive’s *Wind Mobile* service, which launched in 2010.

Globalizing property rights in Canadian spectrum: The case of Globalive

While the AWS auction established a foothold in the Canadian market for new competitors, it is worth pointing out the limitations of Globalive’s successful bid. Viewed through the narrow lens of consumer sovereignty and choice, Globalive’s entry into the Canadian market has been touted as a victory for consumers and a sign of Industry Canada’s success in fostering greater competition in the wireless industry. Viewed from a broader public interest and cultural sovereignty perspective, however, the Globalive story raises some red flags.

Firstly, while nominally a Canadian company delivering long-distance phone services under the *Yak Communications* brand, Globalive is, in reality, a foreign-owned and controlled entity. Globalive is a creature of an Egyptian-based company called Orascom Telecom Holdings, a major player in the cellular markets of Africa, South Asia and the Middle East. Orascom is in turn controlled by Weather Investments S.p.A., the investment vehicle for the personal fortune of Egyptian billionaire Naguib Sawiris, whose net worth is estimated at US\$13 billion.¹³ Orascom owns 65% of Globalive’s equity issues and holds the majority of the company’s debt, giving the lie to the notion that this is a Canadian-owned and controlled company.¹⁴ Thus, in awarding spectrum licenses to Globalive as a new entrant in Canada’s wireless market, Industry Canada has effectively ceded ownership and control of a large chunk of Canadian spectrum to a foreign billionaire, whose intention is to leverage Canadians’ spectrum resources to increase the value of his investments. One wonders, furthermore, how Canadian telecom consumers will benefit from the presence of a foreign-owned and controlled company in an indus-

try already beset by deteriorating service, marketplace abuse and unjust discrimination? Does anyone seriously expect a foreign-controlled entity like Globalive to be more sensitive and responsive to the needs of Canadian consumers?

Globalive's entry into Canada's spectrum ownership and wireless services market also runs afoul of the *Telecommunications Act* (1993), which explicitly promotes Canadian cultural sovereignty (Sec. 7) and prohibits majority ownership of telecommunications common carriers by foreign companies (Sec. 16). The latter section stipulates that a common carrier must be "a Canadian-owned and controlled corporation," in which Canadian ownership and control are defined as follows: (a) not less than 80% of the members of the board of directors of the corporation are individual Canadians; (b) Canadians beneficially own, directly or indirectly, in the aggregate and other than by way of security only, not less than 80% of the corporation's voting shares issued and outstanding; and (c) the corporation is not otherwise controlled by persons that are not Canadians. The CRTC undertook a review of Globalive's status in 2009 and came to the conclusion that the company failed the Act's domestic ownership test, throwing the launch of Globalive's national cellular network into jeopardy.¹⁵ An almost unprecedented and last minute intervention by the federal Cabinet was required in order to keep the roll-out of Globalive's network on track. Led by Industry Minister Tony Clement, the federal Cabinet overruled the CRTC's foreign ownership decision in the Globalive case.¹⁶

Finally, as a telecommunications carrier, rather than a broadcast undertaking, Globalive will not be bound by Canadian content regulations, this despite the fact that wireless handheld devices are rapidly displacing traditional devices such as televisions as the platform of choice for the consumption of broadcast content like streaming video. Unlike Canadian wireless providers like Rogers and Videotron's parent firm Quebecor, which have significant investments in Canadian content production (e.g. Rogers' stable of cable channels, radio stations, professional sports teams, and magazines) and which they have a commercial interest in promoting across multiple platforms, Globalive will have little incentive to deliver and promote Canadian content to its wireless subscribers. Indeed, as long as Cana-

da's regulatory system fails to address the rapid convergence of carriage and content, firms like Globalive will be able to outflank Canadian content requirements. Canadian telecommunications firms, meanwhile, may feel compelled to divest from their Canadian content holdings in order to compete on a level playing field. If this is the kind of new entrant that Industry Canada is looking to entice into our wireless market then perhaps Canadians would be better off with the Bell/Rogers/Telus oligopoly afterall; better the devils you know.

For its part, however, the federal Tory government is bent on accelerating the sell-out of Canada's communications and cultural sovereignty, with its announcement in the March 3, 2010 Speech from the Throne that the government "will open Canada's doors further to venture capital and to foreign investment in key sectors, including the satellite and telecommunications industries" by relaxing existing restrictions on foreign ownership.¹⁷ As argued elsewhere in this volume, however, opening the door to increased foreign ownership in Canada's telecommunications market in no way guarantees increased competition and consumer choice. While the emergence of a new entrant like Globalive may increase choice in the short term, the long term effect may be to induce existing Canadian firms to merge with one another to form one or two so-called "national champions" in order to compete with deep-pocketed foreign competitors, with the end result being no net gain in the number of firms in the marketplace and no benefit to consumers. Potential mergers between telecom giants Bell and Telus, on the one hand, and the two dominant cable firms, Rogers and Shaw, have been rumoured to be in the works for a number of years.¹⁸ Encouraging new foreign entrants to compete with Canadian firms will increase the likelihood that such mergers will go ahead.

Reaping the digital dividend?

If the current picture of spectrum policy and allocation in Canada appears bleak, however, there are a number of more hopeful signs on the horizon. One is the so-called "DTV transition," referring to the switch by TV broadcasters from analog to digital transmission, which will free up a large slice of prime spectrum in the 700MHz range for

new services. Consumers and citizens stand to benefit considerably from this “digital dividend,” as it has the potential to contribute to increased competition and better choice among service providers, the extension of broadband connectivity to un- and underserved rural and remote communities, the development of community-owned broadband networks, the growth of alternative/community media, and improvements in emergency response communications.

The U.S. Congress mandated that all U.S. broadcasters implement their DTV transition no later than June 12, 2009. With the U.S. DTV transition now largely complete, the FCC has since reallocated much of the reclaimed spectrum. Canada’s DTV transition has been much slower, however. For its part, the CRTC fixed the date for the completion of Canada’s DTV roll-out as August 2011, more than 2 years *after* the U.S. deadline. Broadcasters are in no hurry to rush the DTV transition either, with analog service still predominant in many markets.¹⁹ Industry Canada, meanwhile, has yet to announce any consultations, plans or rules surrounding the auction of 700MHz spectrum to be reclaimed as a result. The slow progress of the DTV transition in Canada puts off by at least two more years the possibility of using reallocated spectrum to stimulate sorely needed competition and service innovation in Canada’s wireless marketplace.²⁰

A second and closely related development is the precedent-setting decision by the FCC to impose limited “open access” conditions on license-winners during the 700MHz auction in the U.S. in 2008. In the run-up to the auction public interest advocates backed by a coalition of wireless technology firms, including Google, called on the FCC to impose a variety of “open access” conditions on the winners of at least a portion of the spectrum up for bid, including: a requirement that some licensees sell access to their networks to third parties at wholesale prices²¹; greater freedom for consumers to use the devices and applications of their choice; limits on the bidding activities of incumbents; and other measures to ensure that new entrants could gain a foothold in the market.²² While the FCC did not embrace all of these proposals, it nonetheless adopted auction and licensing rules that represent a partial victory for consumers and the public interest.²³ In particular, the regulator set aside a substantial block of spectrum to be auctioned off subject to limited open access

conditions, including a requirement that the resulting network allow consumers to connect via the devices of their choice and to use the applications of their choice, thus blocking wireless service providers from engaging in such anti-competitive practices as locking out certain devices (e.g. competitors' handsets) and blocking certain applications (e.g. streaming video, p2p applications).²⁴ In addition, the FCC also agreed to open up a limited amount of new spectrum to unlicensed uses.²⁵ While falling short of open access as envisioned by public interest groups and potential new entrants like Google, the FCC's 2008 decision helped to establish a beachhead for a more progressive approach to spectrum policy in North America.

Canadian plans for a 700MHz spectrum auction have yet to be made public, although an announcement should be forthcoming sometime in 2011 as the DTV transition moves forward. The 700MHz auction rules in the U.S. provide grounds for optimism that consumer and public interest perspectives will influence the auction and licensing rules to be adopted for Canada's 700MHz auction. The AWS spectrum set-aside provision allowing market access for new entrants also established a toehold of sorts. Having said this, there are limitations to the gains made in 2008 and more work remains to be done to expand Industry Canada's understanding of the public interest in spectrum allocation.

Reclaiming the spectrum commons

To conclude on an optimistic note, we are witnessing a resurgent grassroots interest in the allocation and use of spectrum in Canada. With technological developments in recent years, citizens' groups, municipalities, communities, and amateur enthusiasts are asserting new claims to the spectrum, taking advantage of the decreased cost and increased usability of wireless technologies to develop community-owned broadband networks, free wireless hotspots, and low power FM radio stations, as platforms for local development and community media.²⁶ Meeting the burgeoning need for spectrum to support grassroots, community-based communication initiatives calls for a rethinking of Canada's current approach to managing and releasing spectrum, which favours the privatization and consolidation of spec-

trum in the hands of incumbents and wealthy foreign interests. The increased appetite for spectrum on the part of citizens and communities offers hope that a broad-based constituency for public interest spectrum policy will emerge in Canada, as it has in the U.S. Given the technical and bureaucratic nature of the issues involved, this is a daunting challenge. And yet there is hope, for while we have yet to see such a constituency form and organize here in Canada, over 250,000 U.S. citizens participated in FCC public consultations on the 700MHz auction, suggesting what is possible when citizens are given the right information and informed about what is at stake.²⁷ There is an urgent need for us to articulate and mobilize around a public interest-oriented spectrum politics in Canada, before it's too late. The next year or two will present Canadians with unprecedented opportunities to reclaim portions of the radio spectrum as a public resource to be used for the greater good; but success is far from guaranteed, and will depend on the extent to which stakeholder groups are identified and then educated about and subsequently organized around a progressive vision for spectrum policy.

Graham Longford is a Toronto-based independent scholar whose research and writing focus on telecommunications policy and access to ICTs. He has been a research fellow and co-investigator on a number of major research projects including, most recently, the Community Wireless Infrastructure Research Project (CWIRP). Longford holds a Ph.D. in political science from York University.

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Fibre Not Satellite for Local Economic Development

Marita Moll

There is a growing concern among rural and remote citizens that Industry Canada's response to broadband connectivity in their communities will be access to a basic internet connection via satellite.¹ Satellite services, they say, don't provide communities with the opportunity to use the internet for economic development or marketing. "This is a consumer version of internet connectivity that does not see rural and remote communities as producers in the digital economy," says Arvo Koppel, head of system operations for the Peace Region Internet Society (PRIS) which provides ADSL and wireless services to 6000 subscribers in Northern B.C.²

Basic satellite, it seems, works pretty well for opening web pages (downloading) but really stalls when users try to send information (uploading). For telehealth or local business applications, it is barely better than dial-up. Applications like video-conferencing and internet telephone (VOIP) services are either impossible or severely compromised because the information must travel thousands of miles above the earth and back on its way to the sending and receive-

ing destinations. This might happen almost at the speed of light, but it is not fast enough for applications like “cloud computing” which would be a 100% non-starter in the satellite world. Multi-user video-games would also present a challenge: “The joke is that you could get yourself all shot up in the game before you even see the enemy approach on your screen,” says Koppel.

The KO-KNET team in Sioux Lookout, which maintains connections in northern parts of Manitoba, Ontario and Quebec, has extensive experience working with different satellite solutions that have come along over the past 12 years. K-Net coordinator Brian Beaton says “I can very easily state that any satellite internet-only solution must be considered as short term and as the last resort whenever any connectivity planning is being completed. It is not capable of delivering the connections required for telemedicine applications that can support video consultations with medical professionals.” KO-KNET does deliver a broadband C-Band satellite service,³ which requires more power and bandwidth, to support community applications including telehealth, e-learning, and videoconferencing, “but this is a very expensive and heavily subsidized alternative for those communities that can be reached only via satellite.”

In P.E.I., the Afton Computer Club found out that the hard way that internet access via satellite could be makeshift at best. Director Elizabeth Sears says “We were constantly being slowed down for taking up too much bandwidth — sometimes back to dialup speeds for the day. This went on day after day. Also the cost was incredible. We paid almost \$2000 for the dish, modem and installation and about \$100 per month which was required up front. Upload speeds were abysmal.” Afton gave up after three long years and switched to wireless connectivity.

Users in rural and remote regions are anxious to get connected but don’t always realize the trade-offs. Some residents in the Peace Region invested well over \$1000 in installation costs and signed a three-year contract with a satellite provider. “How many e-mails would you like from people who are on satellite that are asking if PRIS can provide an alternate rural broadband instead, or who are switching back to (would you believe) dial-up?” asks Koppel.

Satellite providers maintain that new generations of equipment will lead to improvements in both price and service and it is true that the technology is evolving — but it is a constant game of catch up. For example, the Nunavut Broadband Development Corporation received \$7.8 million from the infrastructure fund to improve satellite services in their region. They established two dedicated pipelines — one for videoconferencing and the other for large file transfers. The new system lets communication between communities take place in a single hop which reduces the load on bandwidth and lessens delay time.⁴ “These new services add to user costs but they are appreciated” says Darlene Thompson, coordinator of the community access program in Nunavut. But it’s more about treading virtual water than jumping ahead. “As applications over the net get more and more robust and band-intensive, this move has just kind of ‘kept up’ with need,” says Thompson.

Users report that the satellite option does not usually support local communities trying to improve their socio-economic status. Money is simply exported outside communities which are often already economically challenged. Then publicly funded bandwidth is utilized by far-away corporate entities to sell other services in these communities. The cycle of dependency and poverty is further compounded by an economic development strategy that does not include the local community and the development of local enterprises. It’s a situation that “further impoverishes communities whose residents are not given any other choice” says Beaton.

Community networking advocates say that fibre infrastructure capable of supporting essential services like health, education and small business is the only kind of connectivity that can provide rural and remote communities with a stable economic future. But it requires millions of dollars of private and public investment to get the job done. Although a few communities, like Olds, Alberta and Golden, B.C., are forging ahead, it is a daunting task for most already overstretched communities.⁵ PRIS is currently working on connecting the rural community of Hudson’s Hope (population 1012) with Fibre to the Home (FTTH). “It is a challenging undertaking indeed on a small scale basis, because there are significant up-front unit costs that would be the same for 50 homes as for 10,000 homes, and because local ISP’s who may have less history than we do would have

difficulty wrapping their heads around investments with 20 year paybacks, rather than a more typical three year paybacks,” says Koppel. The success of such an operation will depend heavily upon having an affordable, controllable inter-regional network like Alberta SuperNet, the 13,000 kilometers of entrenched fibre optic cables and 2,000 kilometers of high speed wireless links that connect 429 communities in rural and urban Alberta. “Without that, we can have our FTTH neck wrung by an unregulated incumbent inserting a bit of a kink, economic or otherwise, in the network backbone.” There is no SuperNet equivalent in B.C. Although B.C. was first out of the starting gate in 2005 with a public/private regional backbone program supported by NetWork B.C. in 2005, this has not been robust enough to keep up with current demands.⁶

Is the satellite approach to connectivity being encouraged as a quick fix by the federal government? Those who applied for funds to deliver satellite service under the \$225M set aside in the federal infrastructure fund to connect rural areas would have been pleased to see that they could capitalize five years of recurring satellite bandwidth capacity lease costs and include these in their application proposals. Applicants seeking to provide other kinds of service were not cut that kind of slack — only non-recurring capital costs were eligible.⁷ Perhaps it was the only way to engage satellite providers, but it does appear to make special accommodations to a problematic technology while not doing anything to encourage more robust solutions. Unfortunately, decisions to invest in technologies that won't make the grade in the long run are going to haunt us for generations to come.

Like the building of a national railway, major change in national transportation and communications infrastructures starts with a vision. After developing a national broadband strategy, Australia, a vast and sparsely populated country not unlike our own, has begun building a national high-speed broadband network that would deliver up to 100Mbps to 90% of its citizens. The eight year, AU\$43 billion project will be one of the largest state-sponsored internet infrastructure upgrades in the world.⁸ The intention is to provide 93% of homes, schools and workplaces with “fibre to the premise” connection. Attempting to start up a similar plan, U.S. President Obama has pledged US\$7.2 billion in a plan to bring 100Mbps connections to 100 million Americans.

These national infrastructure building plans are being undertaken because, in today's communications world, it makes economic sense. Surely the same business case can be applied in Canada. But nothing will happen until a clear vision and a plan to get us there emerges at the highest levels of government.

Marita Moll is a CCPA research associate and a Board Member of Telecommunities Canada. She was a co-investigator with the Canadian Research Alliance for Community Innovation and Networking (CRACIN).

Notes

1. Satellite internet (sometimes called internet-only) refers to a product that gives users access to an internet service provider via a satellite connection usually using a KA or KU-band satellite service.
2. Interviews and e-mails with community partners quoted in this article were conducted in April/May 2010 and October 2010.
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Making Traffic Public

A Proposal for a Public Study of Internet Usage in Canada

Fenwick McKelvey

Canadians, for too long, have been excluded from important decisions about the future of the internet, in part, because vital data about its usage remains hidden from the public eye. How much capacity do our networks hold? How much congestion exists on them? How great is the divide between urban and rural broadband? The lack of a clear picture of the internet thwarts public participation in the debate concerning its public good. This chapter imagines a public research project to collect and share information about how we use the internet.

Canadians have a rich history of broadband advocacy¹ and recent developments suggest that the means exist to mobilize this enthusiasm into a public research project. Millions of Canadians already create data on the web each day. Our posts to Facebook, edits of Wikipedia, and stream of tweets contribute to the content driving the most popular sites online. Interactive forms of research and data collection now offer a solution to the lack of public data about internet usage.² With the assistance of new online tools, Canadians could monitor their own internet usage, pool this data in a public

resource, and analyze it to better understand how the internet operates in Canada. The objective is to facilitate greater public participation in the political and policy processes through the production and analysis of internet usage data.

What are internet usage data?

Internet usage data helps us understand how we use the internet. Usage differs from related questions of internet access. How many Canadians have access to the internet? How much does access cost and is it affordable? Does internet service provision in Canada exclude, for example, First Nations, the elderly, the poor, or rural and remote communities? The answers reveal many of the digital divides that exist in our society. Internet usage, on the other hand, asks what we do *with* access to the internet. Answers reveal another set of digital divides — technical barriers, bandwidth issues, traffic shaping, and access filtering. Internet usage also explores the popular activities online. What are the most popular sites or ways of communicating online? Since the internet is still developing as a medium, usage describes how we have come to use the web and guide its future direction.

Many indicators exist throughout the world to explain internet usage but different methods are used to produce them. The Organisation for Economic Co-operation and Development (OECD), for example, surveys its member governments to compare their national average advertised download speeds, and the types of usage limits on monthly plans³ Other studies provide more specific information about internet traffic. The Canadian Internet Use Survey 2009, which surveyed 23,000 Canadians, showed that email remains the most popular application among this group.⁴

Many methods of measuring usage exist because making the internet understandable remains a challenge due to its complexity. Translating the complex mess of wires, machines, humans, and software into trends about bandwidth remains difficult and often prone to framing — i.e. “select[ing] some aspects of a perceived reality and mak[ing] them more salient in a communicating text”.⁵ What aspects of the internet do certain usage data emphasize?⁶ Often who stud-

ies the internet engenders particular ways of understanding it. The challenge, in short, involves finding accountable and accurate representations of communication online.

How does this relate to policy in Canada?

Despite the difficulty of measuring and presenting internet usage, it exerts considerable influence in our communications policy-making process. The CRTC recently ruled on acceptable internet traffic management practices (ITMPS) for Internet Service Providers⁷, and usage data played a major role in the proceedings. Participating parties seeking to influence the ruling constantly cited conflicting internet usage data. The public had limited access to the data cited — keeping the debate outside of the public view. Bell Internet, for instance, provided congestion data for their networks to make the case for the growing threat of network overload, but they filed this data in confidence with the CRTC.⁸ To be fair, releasing data about their networks might threaten their competitiveness. Yet, this secrecy means the public lacks information to counter the claims and hold these firms accountable.

When alternative data on internet usage do appear, they often counter the accuracy of the data submitted by the incumbent telecommunications firms. Incumbents in the CRTC hearings complained about the overwhelming growth in BitTorrent traffic, a popular peer-to-peer file sharing application. BitTorrent countered the claims of Rogers Communications spokesperson Ken Engelhart who argued peer-to-peer traffic caused congestion as it “takes place 24 hours a day seven days a week at the maximum rate of speed that the customer’s service permits”.⁹ BitTorrent data, collected when a client “starts up or has been on/active for 24 hours”, found “the average client is ‘on’ or active for 10–20% of the days of any given month”.¹⁰ Hardly the constant usage cited by Engelhart.

The examples above illustrate how internet usage data plays a major role in policy formulation, but the production and distribution of this data hamper public involvement in the policy process. The conflicting and confidential data on traffic management left the CRTC to sort out the mess away from the public eye. Better public data on

this issue might have aided the CRTC decision — at least making it more public. It certainly would contribute to public participation in any future policy development.

Past public projects on internet usage

The transparency issues and lack of public data could be resolved by more public research on internet usage. We already have some examples of such projects.

ISPs in the United States and Canada only reluctantly admitted to traffic shaping practices after concerned media reform activists made these practices public. In 2007, the Electronic Frontier Foundation (EFF) and the Associated Press (AP) monitored BitTorrent traffic on the network of American ISP ComCast and detected it deliberately injecting ‘reset’ packets into this traffic.¹¹ Deep packet injection, as they called it, disrupted BitTorrent communication by causing the computer on one end to think the machine on the other end had hung up. The practice allowed ComCast to diminish BitTorrent traffic on their network. EFF discovered the traffic shaping using a free software packet inspection tool. Their findings prompted an investigation by the United States Federal Communications Commission.¹²

Where the EFF and AP study focused on one ISP, the *Vuze* BitTorrent application sought to understand the impact of traffic shaping on internet usage by asking its users to install a plug-in to monitor their traffic and send the results to Vuze for analysis. Eight thousands users responded and logged 100,000 hours of traffic usage data.¹³ With this data, Vuze created a list of the ‘Bad ISPs’ that throttled traffic.¹⁴ Many of the ISPs on the list had not widely publicized their traffic shaping, especially in Canada. The list ranked Canada’s Cogeco as the second worst offender. The revelation spread through the news, provoking public concern that fueled the CRTC’s hearings on ITMPs.¹⁵

The work of EFF, AP, and Vuze illustrate how a public research project could operate. Both studies depended on ‘crowdsourcing’ as an alternative to user or government surveys. Crowdsourcing, a word popular in business literature, refers to “ways to tap the latent talent of the crowd”.¹⁶ This tactic is also used in the Herdict Web project which studies internet censorship by asking its users to report the

times they cannot access a website and their location. The site creates a map of the world with updates appearing as users report blockages.¹⁷

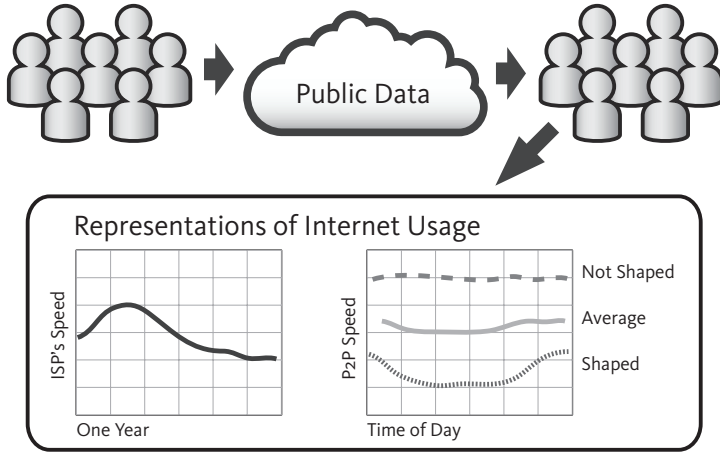
In another example, IXMaps, a project of the New Transparency Project at the Faculty of Information at the University of Toronto, seeks to identify how our information moves across the internet and whether it passes through known points of government surveillance.¹⁸ Concern over internet surveillance arose after a leak revealed the National Security Association and AT&T partnered to install secret rooms in many of the major traffic aggregation hubs on the internet. With the leak came the locations of some of the major surveillance hubs. IXMaps allows users to contribute their traffic routes to reveal whether a users' communication passes these sites or to potentially identify other sites. The research project, in other words, reveals where surveillance might take place on the internet. Crowdsourcing provides a way for the public to participate in this research.

These projects crowdsourced by developing software which allowed users to monitor their traffic, and make conclusions about the nature of their internet connection. In doing so, they mobilized the public as an alternative source of internet usage data. While the term crowdsourcing is new, John Dewey, the American Pragmatist, believed "we lie...in the lap of an immense intelligence".¹⁹ The challenge, as Dewey recognized, was to mobilize this intelligence.

Imagining a Public Research Project

A public internet usage project entails Canadians voluntarily monitoring their usage, pooling this data in a common repository, and sharing it. It might require individuals to install an application on their computer or a website for people to run tests on their internet connection. Importantly, test results would become a public data resource.²⁰ Some potential uses of this data might include a comparison of ISPs' traffic management practices, accurate bandwidth tests to compare rural and urban internet access, measures of internet speed across the country, the popularity of protocols, and average consumption of bandwidth. Data would not only come from the public, but would be open for public interpretation. Ideally, visualization tools, like Many Eyes²¹, would allow the public to explore

FIGURE 1 Representations of Internet Usage



the data and to better understand their internet usage. Figure 1 illustrates this process of collecting, and then allowing users to create representations of internet usage. It marks a first step toward working through some of the practicalities of such a project.

Development has already begun on software to monitor, collect, and analyze internet usage in the way described above. A consortium of industry and academic researchers²² created the M-Lab to provide “an open platform for researchers to deploy Internet measurement tools”.²³ The website lists a number of different tools to monitor traffic shaping, bandwidth usage, and congestion. The Electronic Freedom Foundation has also begun work on a similar tool, known as the *Switzerland Network Testing Tool*, to test traffic shaping based on its early work with ComCast.²⁴ Importantly, all these tools exist as open-source projects, so those who are technically adept can scrutinize the code or contribute to its development. Canadian media reform movements should consider partnering with these projects to bring the capabilities of this software into the hands of citizens willing to participate in researching the nature of their internet connection.

The proposed public research project seeks to enhance the democratic policy process. Public data would enable greater participation by both holding Canadian firms accountable and orienting resources and development towards the common good. The hearing on internet traffic management practices showed the need for a pub-

lic data project as the CRTC places the onus on the complainant to prove a violation of its guidelines. Public data would enable the collection of evidence for these complaints. The ruling on this issue also required ISPs to explain their traffic shaping to the public, but, as Michael Geist, Canada Research Chair of Internet and E-commerce Law at the University of Ottawa, points out, many firms have yet to comply.²⁵ Finally, many of the technologies driving concerns about network management in Canada, including deep packet inspection (see Parsons in this book), raise important questions about how to manage scarce bandwidth in support of the public good. For example, the First Nation ISP, K-Net, uses traffic shaping to prioritize its community video-conferencing over other traffic.²⁶ Formulating a similar sense of public good priorities on the wider the internet will prove challenging, but public data would aid this cause.

The project has its risks. The technology to pool information remains in its infancy. The data must always be anonymous and secure. As already noted, this chapter *imagines* a public research project. A project, as Bruno Latour writes, “is a fiction, since at the outset it does not exist”.²⁷ However, this fiction shows clear promise. Public knowledge will enrich how we regulate the internet, how we connect the medium to the public good, and how we hold network owners more accountable.

Fenwick McKelvey is a third-year PhD Candidate in the Communication & Culture program at Ryerson and York Universities. He researches digital political communication, and digital research methods. His dissertation charts the politics of traffic management software — how it controls information and how it meets resistance.

Acknowledgements

Thanks to Susan O’Donnell, Ryan Bigge, Jillian Witt, and Peter McKelvey for their feedback in revising this chapter.

Notes

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4. For the StatsCan News Release summarizes the project, see: <http://www.statcan.gc.ca/daily-quotidien/100510/dq100510a-eng.htm>.
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19. Dewey, J., *The Public and its Problems*. (A. Swallow, Denver, 1954 [1927]), p. 219.
20. Many Internet Speed Tests exists online, see: <http://www.dsreports.com/tools>. The project differs in that it pools these many testing pooling into a common database, not unlike what Ookla has done with the results of its speed tests to produce their global Net Index, see: <http://www.netindex.com/>. A public project would differ because from the Ookla Net Index because the data would be open, likely licensed under the GNU Free Documentation License or a Creative Commons license.
21. Many Eyes is a project hosted by IBM whose “goal is to ‘democratize’ visualization and to enable a new social kind of data analysis.” For more details, see: <http://manyeyes.alphaworks.ibm.com/manyeyes/page/About.html>.
22. Measurement Lab founders include New America Foundation’s Open Technology Institute, the PlanetLab Consortium, Google Inc. and academic researchers. For a complete list of the project’s partners, see <http://www.measurementlab.net/who>.
23. Taken from the project description, for more details see the project’s website: <http://www.measurementlab.net/>.
24. The Switzerland Project contains more details about the project and a download link. See, <http://www.eff.org/testyourisp/switzerland>.
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26. See: McIver Jr., W., Internet in *Media Divides: Communication Rights and the Right to Communicate in Canada*, edited by Marc Raboy & Jeremy Shtern (UBC Press, Vancouver, 2010), pp. 145–174 and McKelvey, F. & O’Donnell, S., Out from the Edges: Multi-site Videoconferencing as a Public Sphere in First Nations. *Journal of Community Informatics* 5 (2) (2009).
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Swimming Upstream

Accessibility and Telecommunications Policy

Deborah Stienstra¹

In November 2008, the Canadian Radio-television and Telecommunications Commission (CRTC) hosted an unprecedented public hearing on accessibility issues in telecommunications. Commissioners heard from many disability and other groups about issues that should be addressed in telecommunications and broadcasting policy related to accessibility. The CRTC followed this hearing with a policy decision in July 2009.

While a number of accessibility issues were addressed in this policy, and the CRTC made a broad commitment to use an equality rights framework in assessing accessibility issues, the CRTC used its regulatory power in a piecemeal fashion, regulating service access but not equipment or the development of telecommunications technologies.² As a result, the CRTC did not provide a basis from which to ensure that accessibility will be addressed consistently now or in new and emerging technologies. This leaves those telecommunications consumers with disabilities and others who require accessibility to ‘swim upstream’ and lay complaints when they face barriers to their access in the hope these will result in greater accessibility.

Accessibility and telecommunications

Telecommunications can be both liberating and present additional or new barriers to people with disabilities. The mainstream popularity of text messaging has widened the communications possibilities for people who are deaf and hard of hearing. Internet telephone directories and other web-based sources of information have meant greater access for people who are blind or visually impaired. Using Skype, iChat and other internet communications applications that include video allows people who require visual clues better access to telecommunications.

In a rapidly changing telecommunications environment, barriers to some users remain. Telecommunications equipment that has not been developed using universal design practices presents barriers to some users. Handsets of telephones may not have tactile features to allow people with little or no vision to distinguish the keys, or may not include adjustable volume control for users with hearing impairments. Web sites of telecommunications companies that do not follow web accessibility guidelines present barriers to people who use screen-reading programs or require particular visual configurations to read the screens. New technology devices such as smart phones or 3G tablets may not include design features that enable accessibility, and may not be compatible with older technologies that *have* addressed accessibility.

Telecommunications policy and accessibility

Telecommunications policy in Canada is regulated by the CRTC primarily through the *Telecommunications Act*. When consumers face barriers in their access to telecommunications, their primary recourse is through a complaint to the CRTC.

Since the early 1980s, people with disabilities have laid at least fifty complaints about the accessibility of telecommunications in Canada, some of which have translated into changes in the telecommunications systems. Others have been rejected, including a recent complaint by Chris and Marie Stark of Ottawa.

As a result of the persistent complaints of people with disabilities to the CRTC, there have been some changes in telecommunications.

For example as a result of a complaint from the Canadian Association for the Deaf, TTY (teletype) machines are required on pay phones provided by telephone companies.³ Other issues that arose from complaints and changed policy include the provision of message relay services, billing information in alternative formats and long distance discounts for TTY users. But these changes took the diligence and skillful use of the complaint mechanism by people with disabilities.

In 2001, the Starks asked the CRTC to overturn its 1994 decision to stop regulating wired phone equipment, arguing that phones had become more complex and inaccessible since that decision. Finally, in 2007 after years of submissions, including objections from most of Canada's major telephone companies, the CRTC denied the Starks' request and refused to re-regulate phone equipment.⁴ The Commission argued that it encourages telecommunications service providers to provide consumers with information about equipment with accessibility features. In its notice of public hearings on accessibility in 2008, the CRTC specifically noted that it does not regulate equipment, and was looking for input on measures to improve accessibility short of regulating equipment. The 2009 policy from those hearings "requests that wireless service providers, in consultation with persons with disabilities, offer at least one type of wireless mobile handset to serve the needs of people who are blind and/or have moderate-to-severe mobility or cognitive disabilities".⁵ The language and content of this measure is extremely restricted, requesting accessibility of equipment from providers who have not yet voluntarily provided accessible equipment.

Several key disability organizations have been at the forefront of working for change in telecommunications policy and practice. In addition to the Canadian Association for the Deaf, ARCH Disability Law Centre has provided submissions to many telecommunications policy hearings as well as providing legal counsel to some of the people with disabilities who have made complaints to the CRTC. In particular, ARCH has argued that inaccessibility is the same as discrimination and the CRTC should therefore regulate telecommunications in a manner consistent with equality and anti-discrimination requirements in the Canadian Charter of Rights and Freedoms and the Canadian Human Rights Act. This is a powerful and impor-

tant argument which recognizes that, in the context of a knowledge-based society where access to telecommunications can be critical to inclusion more generally in society, inaccessible telecommunications is a significant barrier.

In the 2009 policy decision, the CRTC recognized the need for its policies to be consistent with the Charter. In addition, the 2009 policy suggests: “In considering whether or not the proposed accommodations are reasonable, the Commission has also utilized leading Canadian human rights principles that recognize that equality is a fundamental value and central component of the public interest”.⁶ Disability groups recognized that this was a step forward by the Commission, but also noted this statement was in a general section prior to the more detailed measures and were concerned that it would not necessarily be used in the more specific measures of the policy.

The CRTC’s 2009 accessibility policy recognizes “that persons with disabilities generally are not able to influence the market sufficiently to obtain accessible telecommunications products and services”.⁷ The 2009 policy also illustrates that the CRTC is willing to use its regulatory powers to ensure access to services and information for people with disabilities, but is not willing to regulate the design and production of telecommunications equipment or technologies. That regulatory tension will lead to a climate where either the telecommunications companies develop accessible technologies because they think it is in their best interests, or people with disabilities will have to lay complaints when they have not been able to obtain accessible telecommunications in an unregulated market. The United States government used its own government purchasing power to leverage accessible telecommunications developments by requiring accessible telecommunications equipment and software from any company who wanted to supply government contracts.

Deferral accounts

Several years before the 2008–9 accessibility hearings and policy decision, the CRTC took another significant step to require action on accessibility by the telecommunication companies. In what is called the “deferral accounts” decision, the traditional telecommunications

companies (Bell Canada, Telus, Aliant, MTS, SaskTel) who had been providing residential telephone services had been charging consumers more money than what the CRTC considered appropriate. The CRTC had ordered the companies to set aside these excess funds in separate accounts called 'deferral accounts'. In 2006, the CRTC held a proceeding to decide what to do with these funds. It asked the companies to identify, in consultation with people with disabilities, what measures they would undertake to improve accessibility using at least five percent of the funds.⁸ After meeting with disability groups, each company submitted a plan for how they would spend the funds. In its decision, the CRTC approved these plans.⁹

This was a significant and unique decision in part because it required major telecommunications companies to spend millions of dollars on accessibility in consultation with people with disabilities. Bell Canada alone allocated \$24 million to these initiatives. As well, the decision enabled the organizations of people with disabilities to develop a coordinated approach to priorities in telecommunications policy and to meet face-to-face with representatives of the telecommunications companies. These meetings, held in 2007, were an important opportunity for each side to learn about the interests and approaches of the other.

A coalition of disability groups and researchers came together to identify priorities and meet with the telecommunications providers to negotiate. The coalition included the Adaptive Technology Resource Centre (University of Toronto), ARCH Disability Law Centre, Alliance for Equality of Blind Canadians, Canadian Association for Community Living, Canadian Association of Independent Living Centres, Canadian Hard of Hearing Association, Canadian Council for the Blind, CNIB, Council of Canadians with Disabilities, Disability and Information Technologies (Dis-IT) Research Alliance, and the Neil Squire Society.¹⁰

The positions developed by the coalition were shared with the telecommunications companies and the CRTC. In addition, the positions became the basis for many of the submissions of the disability organizations at the accessibility hearings in 2008. These positions articulate what is required to ensure accessibility in telecommunications in Canada and draw from examples of policies and practices in other countries, most notably the United States and Australia.

What is required for accessibility in telecommunications?

The coalition of disability organizations argued that the most important initiative to ensure accessibility in telecommunications was a systemic, comprehensive approach to accessibility at the CRTC. They suggested that the framework of equality rights discussed above, along with a commitment to universal design¹¹ in the development of equipment as well as the environments of telecommunications, would support a systemic approach. This would need to be complemented by a unit within CRTC that had specific responsibility to implement this approach and monitor the progress. ARCH Disability Law Centre argued that until now the CRTC had relied on the very limited resources of the disability organizations to ensure that accessibility would be addressed and that it was time that staff and resources were part of how the CRTC implemented its accessibility mandate.

This type of systemic approach is evident in the United States. The Federal Communications Commission (FCC) has a Disability Rights Office that implements the legislative obligations around accessibility and telecommunications including Title IV of the *Americans with Disabilities Act*, Section 255 of the *Communications Act* and Section 504 of the *Rehabilitation Act*.

In addition to a new disability unit within the CRTC, the disability organizations argued for regular and effective consultations by the CRTC in developing and maintaining the systemic approach. Both the United States and Australia have models of consumer user groups that contribute to the development of accessibility in telecommunications policy. In the U.S., the FCC's Consumer Advisory Committee includes five seats for members of the disabilities community, an equivalent to the number of seats for industry representatives.

Part of a systemic approach is to have national coverage. While the deferral accounts decision was an important step towards a more accessible telecommunications system, it only applied to those service providers with deferral accounts in the context of what each proposed. There was no mechanism under the deferral accounts decision to develop initiatives that would cover all of Canada. For example, the deferral account submissions from Bell Canada and Telus included video relay, a service that enables people who are deaf or

hard of hearing to use relay operators to transmit and receive video messages via high-speed internet. Under this scenario, video relay would have been introduced in Ontario and Quebec by Bell Canada and in British Columbia and Alberta by Telus, but not anywhere else in Canada. In response to the 2008–9 accessibility hearings, the CRTC decided not to begin these regional developments until 2011 with the earliest possible national video relay system developed in 2013. That decision also requires all telecommunications service providers to deliver a text-based relay system called internet protocol relay system by July 21, 2010. The IP relay service is seen to be an extension of the commitment to provide TTY to all consumers.

The CRTC accessibility hearings and policy as well as the deferral accounts decisions yielded some significant improvements for people with disabilities in Canada, but the CRTC failed to develop and implement a systemic approach to accessibility in telecommunications. While some of the barriers identified by the disability community have been addressed, there remains a critical need for regulation, especially in the design of equipment and technologies, and a systemic approach to accessibility by the CRTC. Without these, telecommunications consumers with disabilities will be swimming upstream and remain forced to rely on their own persistence and complaints to ensure accessibility to this critical area.

Deborah Stienstra is a professor of Disability Studies at the University of Manitoba. Between 2003 and 2007 she led the Disability and Information Technologies (Dis-IT) research alliance (www.dis-it.ca) funded by the Social Sciences and Humanities Research Council's Initiative on the New Economy.

Further reading

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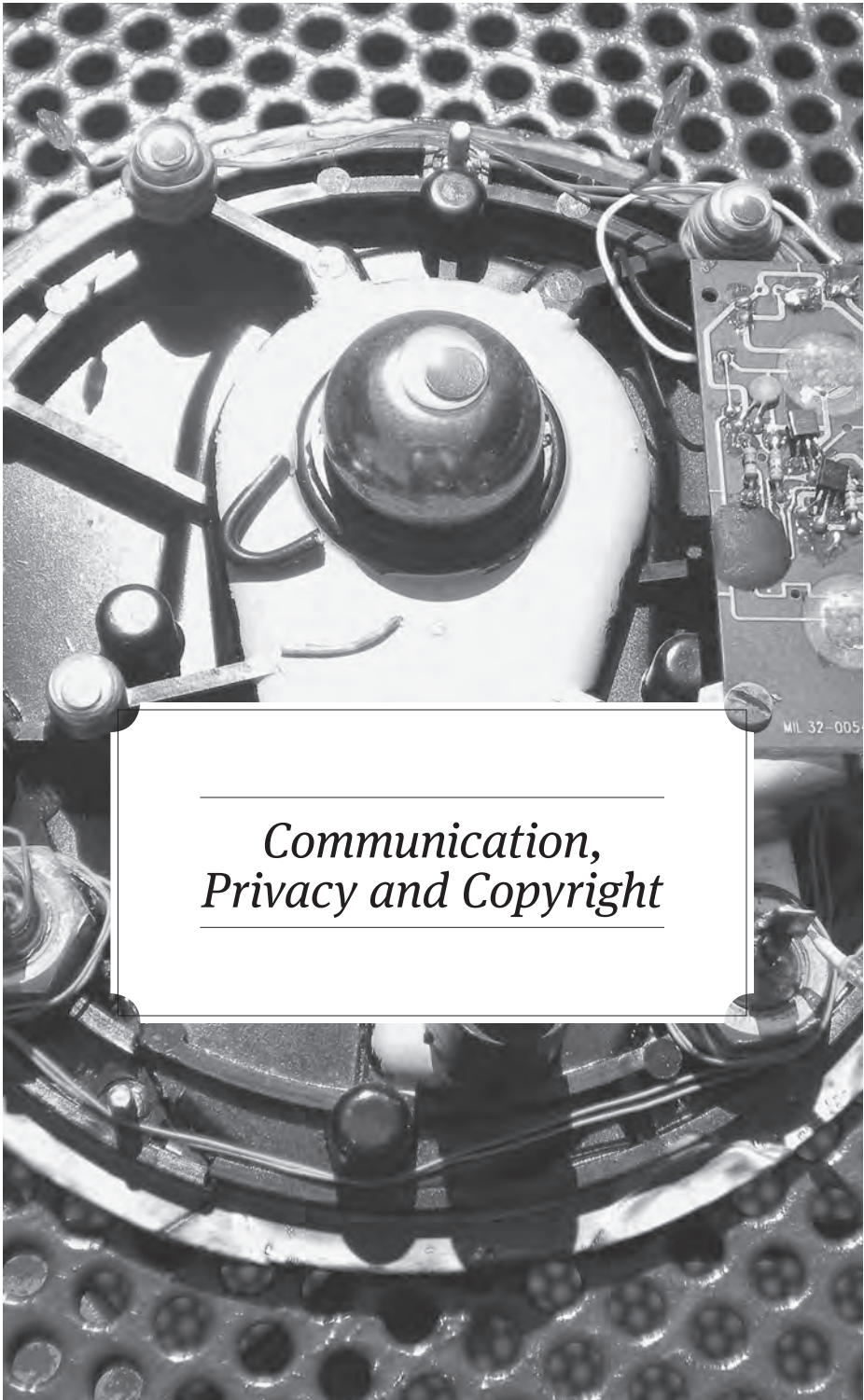
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Notes

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8. The other 95% was to be used to develop broadband internet services to rural and remote communities across Canada.
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*Communication,
Privacy and Copyright*

Communication Rights and Canada's Government Online

Principles for Policy and Social Diversity¹

Michael Felczak, Richard Smith, and Geoffrey Glass

Introduction

Since its official launch in April, 2000, Canada's federal government has allocated and spent nearly \$1 billion in its implementation of the Government On-Line (GOL) initiative, which aims to provide government information, services, and consultations via the internet. According to the federal government, the goal is not only to become "a model user of information technology and the internet," but also "to be known around the world as the government most connected to its citizens".² Today, Canadians can access 130 of the most commonly used services online in both English and French as well as participate in many public consultations via the internet.³

Although Canada's programs have been recognized internationally by e-government consultancy groups as both innovative and suc-

cessful,⁴ researchers have generally found claims about the transformative nature of Canada's e-government to be oversimplified and have highlighted the many complex and at times contradictory issues that accompany these initiatives.⁵

In this chapter we present a summary of our recent contribution to this growing body of research by examining the extent to which Canada's federal government has ensured the communication rights of Canadians in the online provision of information, services, and consultations.⁶ This research involved an analysis of government policy documents, government websites, user experiences, and the existing and evolving personal computing environment in Canada.

Based on the available evidence, we suggest that the federal government has failed to adequately ensure the communication rights of certain segments of the Canadian population and for certain forms of communication. This social exclusion applies to Canadians who use free and open source software, including Canadians who seek alternatives to proprietary software; Canadians who require low-cost computing; and Canadians who access the internet via public libraries and community centres that use free and open source software. In addition, this exclusion also applies to Canadians without access to the internet, including Canadians that do not use or plan to use the internet but who nonetheless may need to communicate with government or participate in public consultations using more traditional means.

While some important considerations have informed policy decisions to date, specifically in terms of recognizing that a diverse population has diverse communication requirements, our research indicates that these considerations have not been extended consistently to both online and offline communication. In what follows, we provide a brief overview of communication rights, identify specific problem areas in the federal government's communication infrastructure, and suggest policy recommendations that address the identified shortcomings.

Communication rights

The idea of a “right to communicate” first emerged in the 1960s when Jean d’Arcy, a director at the United Nations, argued that although the *Universal Declaration of Human Rights*⁷ guarantees freedom of opinion, expression, and information, it fails to explicitly account for the bi-directional nature of communication: one may be free to impart and receive information, but these freedoms may not protect the sort of interactive, bi-directional communication facilitated by telecommunications.⁸

Around this time the right to communicate was also recognized by Canada’s Telecommission, established in 1969 to assess the state of telecommunications and related policy in Canada, which directed over 40 studies, organized conferences and seminars, and sought input from industry, government, and academic experts. The right to communicate is situated in the commission’s final report as a concept that received wide acceptance from participants:

[T]he predominant theme underlying nearly all the discussions at the seminars was that the ‘right to communicate’ should be regarded as a basic human right. In the impending age of total communications, the rights of assembly and free speech may no longer suffice...if all Canadians are to be provided with the minimum services needed for the exercise of a ‘right to communicate,’ political decisions and money will be required.⁹

Nearly a decade following the publication of the Telecommission’s report, the United Nations adopted the recommendations of its own international commission that examined global information flows, communication problems, and communication rights. The international commission’s final report identifies the individual’s right to know, impart, and discuss as follows:

(a) The right to know: to be given, and to seek out in such ways as he may choose, the information that he desires, especially when it affects his life and work and the decisions he may have to take, on his own account or as a member of the community. Whenever information is deliberately withheld, or when false or distorted information is spread, this right is infringed.

(b) The right to impart: to give to others the truth as he sees it about his living conditions, his aspirations, his needs and grievances. Whenever he is silenced by intimidation or punishment, or denied access to the channels of communication, this right is infringed.

(c) The right to discuss: communication should be an open-ended process of response, reflection and debate. This right secures genuine agreement on collective action, and enables the individual to influence decisions made by those in authority.¹⁰

Although only the right to discuss explicitly mentions governance and decision-making, the right to know and impart are also clearly important in this regard, both on their own terms and as necessary preconditions for the right to discuss. In addition, the right to discuss highlights that communication is something more than the sum of the expressions of many individuals with private needs and interests; in its fuller sense, it involves collective deliberation about the common good and is the basis for collective action.¹¹

Internet use in Canada

At the national level, the state must not only recognize communication rights in a general sense, but must also support them in the particular context of communication between citizens and the state. Today, this includes communication that takes place via the internet between government and Canadian citizens who use a wide variety of computers, devices, public terminals, and software, including free and open source software (FOSS), to access government information, services, and complex, online software applications. This technological diversity reflects to some extent the diversity of the Canadian population, across education, income, age, and technical capacity — a diversity that the Government On-Line Advisory Panel recognizes:

Complicating the demand scenario are the various rates of adoption of new media, such as the Internet, based on distinctions such as age, capacity, income, and geographical location. The government must be in a position to provide service to all of its clients in a fair and effective manner....¹²

Although rights are not explicitly mentioned, the implication is that the federal government must ensure the communication rights of all Canadians by establishing an infrastructure that is capable of supporting Canada's diverse population and communication needs, and consequently, the rights of all Canadians to know, impart, and discuss.

Although free and open source software is typically freely available (*gratis*) for anyone to use, the term "free" actually refers to "freedom," that is, the freedom of users to modify, use, and distribute the software according to their needs. Today, free and open source software is used by both individuals and community groups in Canada as a low-cost alternative to proprietary software:

- The federally-funded Community Access Program (CAP), which includes over 100 public internet access sites in B.C. alone,¹³ includes sites that use FOSS for their computer terminals.¹⁴
- Some public libraries in Canada use FOSS for their public computer terminals to provide word processing and access to the internet.¹⁵
- Non-profit organizations such as Free Geek refurbish older computers with FOSS and make them available to lower income individuals and families free of charge or for as little as \$40.¹⁶
- Mainstream computer manufacturers, including Asus, Acer, and Dell recently released compact laptops ("netbooks") with FOSS that sell in Canada for approximately \$290 , \$330 , and \$360 , respectively.¹⁷

Recent sales figures from Dell, one of the largest computer retailers in North America, indicate that approximately one-third of all Dell netbooks sold to date have in fact been FOSS netbooks.¹⁸ In addition, Google has recently entered the computer market and released a free and open source operating system for netbooks.¹⁹ Free and open source software is thus used by Canadians who may prefer it over other alternatives as well as individuals, households, community centres, and public libraries in Canada for whom FOSS lowers the cost of computing.

Government On-line: Problem areas

Our research findings indicate that Canada's federal government has failed to ensure the communication rights of Canadians who select or must use free and open source software in their internet communication. More specifically, we have identified the online provision of documents, audio and video, and advanced software applications by the federal government as problem areas for FOSS users in Canada:²⁰

1. Although many documents are published online using open formats, such as the Portable Document Format (PDF), and are accessible by all computer users, some documents are published on government websites using proprietary file formats that cannot be accessed reliably by Canadians who use free and open source software.
2. Even though open file formats exist for multimedia that are compatible with all computer systems, the increasing use of audio and video on government websites relies exclusively on proprietary file formats that cannot be accessed reliably by FOSS users in Canada.
3. Some advanced software applications (e.g. the Online Census) include incompatibilities that prohibit their use with FOSS, despite the fact that open standards exist that would ensure full compatibility across all computer platforms.

To complement our review of government websites, our research also included an online questionnaire, which included responses from Canadians who use free and open source software and who indicated some experience with government websites.²¹ According to the questionnaire results, most respondents believed that government websites should be compatible with all computer systems, regardless of internet connection, operating system, or software. In practice, however, Canadian users of FOSS indicated that their needs were not being met by existing government websites:²²

- "Web sites are usually slow. Information often difficult to understand. Too often it is expected that I am using some Microsoft product..."

- “It is insane to keep government websites only accessible for those with high-speed connection and Windows XP running Internet Explorer.”

In addition to the identified problem areas for users of free and open source software, our examination of the public consultation framework revealed that the federal government has also failed to ensure the communication rights of Canadians who do not use the internet: some consultations are conducted exclusively online and exclude these Canadians from participation. Although it may be tempting to dismiss this segment of the Canadian population as a temporary phenomenon resulting from slow media adoption, recent research suggests that some Canadians simply do not use or plan to use the internet.²³ This finding calls into question the legitimacy of consultations that are conducted exclusively online: How can these consultations represent the views of Canadians if some Canadians cannot participate in the process?

Policy recommendations

Although the technical requirements for federal government websites — defined by the *Common Look and Feel Standards for the Internet* (CLF) published by the Treasury Board of Canada²⁴ — include considerations for people with disabilities, they do not include the necessary provisions to ensure accessibility for Canadians who select or must use free and open source software in their internet communication with the government.

To ensure the communication rights of all Canadians, the CLF would need to be amended to include requirements that mandate the use of open file formats and standards compatible with all computer systems, specifically for digital documents, audio and video, and advanced software applications. These amendments do not need to prohibit the use of other or existing file formats, but must require that all government websites always include open file formats and standards as options to ensure compatibility with all computer systems.

In the case of public consultations, all Canadians must have an opportunity to participate using communication methods that best

TABLE 1 Problem areas and policy recommendations

Problem Area	Description	Policy Recommendations
Documents	Some published using proprietary formats • Infringes on right to know	Amendments to CLF*
Audio and Video	All published using proprietary formats • Infringes on right to know	Amendments to CLF*
Software Applications	Some rely on proprietary technology • Infringes on right to know, impart, and/or discuss	Amendments to CLF*
Consultations	Some conducted exclusively online • Infringes on right to know, impart, and discuss	Ensure diversity of media Develop comprehensive policy

SOURCE: *Common Look and Feel Standards for the Internet*. Published by the Treasury Board of Canada.

meet their needs. Consultations cannot be conducted exclusively online. They must always offer participants a diversity of communication methods (e.g. telephone, mail, in-person). At a broader level, this shortcoming points to the importance of a long-term, comprehensive policy that takes into account Canadians' variable media use, preferences, and needs and which integrates these with existing initiatives such as the Community Access Program, Service Canada, and Consulting with Canadians.

In its current state, the federal government's online provision of information, services, and consultations fails to ensure the communication rights of Canadians and infringes in very specific ways on the rights of all Canadian citizens to know, impart, and discuss. To conclude, Table 1 provides a concise summary of the identified problem areas and the corresponding policy recommendations.

Michael Felczak is a PhD student in the School of Communication at Simon Fraser University. He is also a researcher at the Centre for Policy Research on Science and Technology and at the Applied Communication Technology Lab at SFU. E-mail: mfelczak@sfu.ca.

Richard Smith is Professor in the School of Communication at Simon Fraser University. He is also Director of the Centre for Policy Research on Science and Technology at SFU. E-mail: smith@sfu.ca.

Geoffrey Glass is a PhD student in the School of Communication at Simon Fraser University. He is also a researcher at the Centre for Policy Research on Science and Technology at SFU. E-mail: geof@geof.net.

Notes

1. This chapter includes portions of and is based on research originally published in *Communicating with (Some) Canadians: Communication Rights and Government Online in Canada*, available from *The Canadian Journal of Communication*, 34(3) at <http://www.cjc-online.ca/index.php/journal/article/view/2020/>
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Children's Online Privacy

Policy Concerns¹

Valerie Steeves

Canadian children are among the most wired in the world — most use online media on a daily basis to stay connected with their friends, explore their interests, listen to music, and do their homework. And the vast majority of the time, they are doing these things on commercially owned sites that seamlessly collect and use their personal information.²

The harms involved in this are often difficult to see, because so much of this collection and use happens behind the scenes. But consider some examples. Online playgrounds seamlessly collect personal information from the kids who play there — their clickstream, the games they play, the comments they make to their friends — and use that information in order to determine how best to steer their play in ways that promote commercial consumption. The collection itself is masked as a game — kids are encouraged to provide this information in order to join a club or enter a contest — and the fact that the playground was created as a tool for market research remains invisible. Many sites, like Webkinz, actively encourage kids to be creative; how-

ever, if a child sends a drawing or story to the site, it becomes the intellectual property of the corporation. Club Penguin encourages kids to become “spies” and to report any inappropriate behaviour on the part of other children; inappropriate behaviour includes removing any of the advertising embedded in the site, an offence which is punished by permanent expulsion from the playground.³ On social networking sites (SNS), companies pay children to drop advertising messages surreptitiously into their conversations with other kids, to help sell products;⁴ And some schools peruse photos posted on SNS to identify young people who are breaking school rules.⁵ Many schools also require children to register on commercial sites that scan their written work to see whether or not they have plagiarized; the default setting on these sites allows the corporation to collect the child’s personal information when they do so.

These sites are interested in kids because their personal information is worth a great deal of money on the open market. By slicing and dicing that information, companies hope to get a piece of the \$115 billion children’s consumer pie.⁶

Advocates have been concerned about the effects of this kind of surveillance of children since 1996, when the Center for Media Education (CME) released a report called *Web of Deception: Threats to Children from Online Marketing*.⁷ The report documented a number of marketing practices embedded in web sites designed for children, including the seamless blending of advertising with content, the aggressive collection of children’s personal information for commercial purposes, and the creation of detailed profiles of children that were used to micro-target them with advertising.

The U.S. Congress responded by enacting the *Children’s Online Privacy Protection Act of 1998* (COPPA), which has set the *de facto* standard for data protection on children’s websites worldwide. Under COPPA, sites “directed to children” must seek verifiable parental consent for collection of information from children under the age of 13. In order to be “verifiable”, the site operator must take reasonable steps to ensure that the parent receives notice of the site’s information practices and consents to them. The primary method to do this is through a privacy notice posted on the site. The notice must stipulate what information is collected, what it is used for, whether the

information will be disclosed to third parties, how the information is secured, and how to contact the site operator for access to the information or to request the information be deleted. Children 13 and over are deemed to be competent to consent on their own behalf.

Similar legislation, called the *Personal Information Protection and Electronic Documents Act* (PIPEDA), was passed in Canada in 2000. Although PIPEDA does not specifically address children, any organization collecting personal information from any person must: tell the person how the information will be used and if it will be disclosed; obtain his consent; keep it secure; and give him access to that information upon request. Technically, since children under 18 cannot enter into contracts, parental consent must also be obtained when information is collected from children;⁸ however, Canadian websites have adopted a COPPA-like regime, only asking for parental consent for children younger than 13–16 (depending on the site).

The protections offered by COPPA have been criticized for a number of reasons. Site operators are only required to comply with the Act if they have actual knowledge that a user is under 13, and many rely on a blanket statement that the site is not intended for use by children to avoid responsibility.⁹ This is particularly problematic given the evidence that children prefer to frequent sites that are designed for adults.¹⁰ Many of the processes in place to verify parental consent by fax, toll free telephone lines or e-mail are inconvenient and unwieldy,¹¹ and policing non-compliance is difficult as it is hard to detect violations.¹² In addition, some children tell us that they simply lie about their age or provide a false parental e-mail address in order to gain access to a site.¹³

Privacy policies on the sites kids visit are also open to criticism. Almost all of them are hard to find, long, and written at a reading level that makes them difficult for children — and many adults — to understand.¹⁴ Children report that they are unlikely to read policies because they are long and boring,¹⁵ and when they do read them, they complain that the legal language and the complex structure are intended to take advantage of them because they do not read at a university level.¹⁶ But perhaps most troubling is the fact that data protection legislation like COPPA has done little to curtail the burgeoning trade in children's information. Detailed dossiers on a million

pre-schoolers, with names and addresses, for example, can be purchased for as little as US\$5.00.¹⁷

Child as commodity

One of the most compelling criticisms of the current regime is that its focus on personal information neglects the fact that aggregate statistics can be used to invade online privacy. Aggregate profiles, created by pooling massive amounts of personal information, are used to subdivide online users, including children, into clearly defined audiences so access to them as individuals can be sold to advertisers.¹⁸

This kind of micro-marketing does more than just deliver advertising. Sites aggressively collect information from children both directly and by recording their movements, interactions and discussions with others, and use that information to develop an intimate relationship between the child and the marketer.¹⁹ Marketers play upon children's developmental needs to experiment with roles, communicate with peers, take risks, and seek advice on issues that are important to them, in order to encourage children to reveal information about themselves.²⁰ They then use that information to create a relationship between the child and the brand, and to manipulate the child's sense of identity to make her more amenable to purchasing messages.²¹

To fully protect children's privacy in the online environment, we must acknowledge the ways in which aggregate information can be used to manipulate individual behaviour.²² Information that is collected about individual children in this way may or may not be associated with the child's name; however, it is funneled into a system that categorizes unique individuals according to patterns of behaviour they share with others. Based on that categorization, the individual child is not just targeted with advertising when he or she returns to the site, but is "re-targeted" — in other words, the marketer feeds the child information in order to change his or her behaviour.

In this system, the child becomes the commodity that is sold to advertisers: "Instead of selling a media product itself, [an online playground] is selling information about the children and young adults who are its fans."²³

A growing number of commentators are questioning whether or not the current privacy regime, with its emphasis on transparency and consent, is capable of protecting children in this environment.²⁴ Research indicates that it is difficult for young children in particular to understand questions about privacy and the consequences of disclosure.²⁵ Children are also much more likely to reveal personal information in exchange for a gift or benefit, without fully recognizing the reasons why the information is sought.²⁶ Moreover, they are often not given any real choice; children who do not wish to register or provide personal information for access to services like hotmail or instant messaging are told simply not to use the service.²⁷ Many children report that, in those circumstances, they just press “click” and accept whatever terms of service are imposed on them, whether they like it or not.²⁸

To ensure we fully protect children’s privacy, it is essential that policy makers take the commercial imperatives that drive information collection into account.

Child as victim

One of the reasons that it has been difficult to restrict the commodification of children’s online privacy is that policy makers often see the problem as a safety issue.²⁹ From this perspective, the interactive nature of the internet puts kids at increased risk of being watched by pedophiles and other ill-intentioned “strangers”. Qualitative research with children indicates that the stranger-danger message has been communicated effectively.³⁰ As one child in Toronto put it, the rules are clear: “No porn, no chat, no personal information.”³¹

Ironically, the desire to protect children from “strangers” has had the paradoxical effect of placing children under increased online surveillance. Commercial sites have tended to equate privacy risks with safety, teaching kids to guard their personal information from “strangers”. However, kids are encouraged to reveal information to marketers and corporations. For example, Neopets.com, the premier children’s marketing research site on the web, warns kids not to give out personal information to other children on the site or to “strangers” on the internet. The site also encourages kids to report any suspicious activ-

ity so Neopets can “take any necessary action” to protect them.³² In this sense, the corporation purports to be part of the solution, rather than part of the problem, and commercial surveillance is normalized.

For their part, parents are encouraged to use key capture software and other technical “fixes” so they can see exactly what their children are doing online, in order to “keep them safe”³³. Some commentators warn that these kinds of approaches tend to breed fear and suspicion, and make it more difficult for children to maintain relationships of trust with their parents and other adults.³⁴ They may also be counter-productive. Kerr and Stattin report that increased parental monitoring of children does not correlate with a decrease in anti-social behaviour as previously reported; rather, children who spontaneously disclose information about their lives to their parents in the context of a relationship built on mutual trust are less likely to act in an anti-social manner.³⁵

The argument that we need to place children under surveillance to keep them safe also feeds into a “moral panic” about the dangers of the internet.³⁶ The more fearful adults become, the harder it is to provide children with opportunities to enjoy privacy, which is essential to developing a healthy sense of autonomy.³⁷ Schools are a case in point. Although the internet is recognized as an outstanding curricular resource, many schools place students under virtual surveillance and threaten children with a loss of computer privileges if they violate the school’s acceptable use policy.³⁸ The intent is to protect children from invasive behaviour on the part of others and to restrict their access to questionable content. However, this type of surveillance may backfire. Davis notes:

To discern and to ‘own’ appropriate connections and justifications requires a certain kind of ‘privacy’ from the teacher. That is, the teacher, as authoritative source of knowledge, needs to be distanced in some measure from the processes through which this discernment and ownership is acquired. In some measure the teacher must lack detailed access to the child’s thinking processes, at least for some of the time, and *the child must be aware that the teacher lacks this access* (emphasis in original).³⁹

Blanket surveillance may then work against the best interests of children, as it interferes with the learning process itself.

Why children's privacy is important

Although data protection laws offer some protection, policy makers have yet to fully accommodate the privacy needs of children. Privacy is an essential element of growing up. Online self-expression is linked to identity formation and a sense of self respect,⁴⁰ and private online spaces give children an opportunity to develop a sense of autonomy.⁴¹ Children turn to the internet to fulfill age-appropriate developmental needs for individuation,⁴² and respecting their developmental need for privacy will encourage them to go beyond the acquisition of “thin” procedural skills and develop a facility for deeper, “connected thinking”.⁴³

Clearly, to deny the existence of online risks to children's safety would be irresponsible.⁴⁴ But at the same time, policy makers must address the ways in which children's online spaces are structured by pervasive surveillance. Current rules do little to restrict the commodification of children's private lives, and the ways in which children's privacy and freedom of expression are limited by organizations that turn them into objects of surveillance.

In order to find a better balance, fair information practices should be supplemented with regulations that limit behavioral targeting of children and immersive advertising in online playgrounds. Schools and libraries should be encouraged to provide children with privacy education, and restrictions on children's freedom of speech and access to information should be carefully fine-tuned to ensure children benefit from the democratic potential of online communication. Parents also need education and support to better guide their children's online activities.

Valerie Steeves is an Associate Professor in the Department of Criminology at the University of Ottawa. She is currently working with the Media Awareness Network on the next phase of the Young Canadians in a Wired World project, a longitudinal study of Canadian young people and online media.

Web site resources

Media Awareness Network

- Information Privacy: <http://www.media-awareness.ca/english/issues/privacy/index.cfm>
- The Internet for Parents: <http://www.media-awareness.ca/english/parents/internet/index.cfm>
- Marketing and Consumerism for Parents: <http://www.media-awareness.ca/english/parents/marketing/index.cfm>
- Educational Games: <http://www.media-awareness.ca/english/games/index.cfm>
- Canadian Internet Policy and Public Interest Clinic: CIPPIC Privacy Projects: <http://www.cippic.ca/projects-cases-privacy/>
- Office of the Privacy Commissioner of Canada: Youth Privacy: <http://www.youthprivacy.ca/en/>

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ACTA

A Copyright Story

Olivier Charbonneau

Copyright, which originated 300 years ago in Great Britain¹ to protect publishers from competitors who copied books without permission, has grown into an international network of national legislation guided by a series of international and transnational agreements generally under the guidance of the World Intellectual Property Organization² (WIPO). The history of copyright reform offers a unique view into how our society deals with technological advancements in markets and uses of cultural, knowledge and information products. From the printing press to the internet, copyright has been the battleground of business models, artistic production and the needs of civil society. A recent initiative, dubbed the *Anti-Counterfeiting Trade Agreement* (ACTA), offers a new chapter in this story. As with all stories, some context is required to better understand the characters and the setting, before getting to the intrigue and (hopefully) the denouement.

Context

By their very nature, intangible assets pose certain problems in economics: they require sizable investments before they are brought to

market; they are expensive to produce but easily copied or replicated by others. This is the case for books, songs and movies, as well as trademarks, industrial designs or industrial production processes, all of which represent some kind of intellectual property (IP). IP legislation seeks to provide incentives to engage in the creation of intangible assets. As with all types of intellectual property, copyright is a government-backed monopoly on certain uses of particular intangible assets.

Broadly defined, copyright is both a commercial right and an artistic right. It is an industrial system whereby governments grant a monopoly on the commercial exploitation of specific kinds of cultural, information or knowledge products. At the same time, original creators are granted certain artistic rights that protect their interests down the line.

Each country is called upon to pass copyright laws that reflect their own imperatives. For example, the *Canadian Copyright Act*³ grants the creator of an original and distinctive literary, dramatic, musical and artistic work rights to produce, reproduce, perform in public, publish, translate, adapt, etc. the work. The creator may, in turn, license (lease) or transfer (sell) this exclusive right in part or as a whole to third parties, known as “rights-holders”, who may wish to produce plays, reproduce art work as posters, publish books or perform movies in public. As well, “moral rights” protect the integrity of a work while ensuring that the creator is given proper attribution. On that last point, the United States does not grant “moral rights” to its creators.

As with any kind of monopoly, be it government-backed or *de facto*, one has to be very attuned to inherent power asymmetries. This is especially true when the monopoly is applied to cultural, knowledge or information products. For example, copyright was originally granted to the creator in the hopes of providing some negotiating leverage with the content industry. At the same time, certain users in civil society were granted limitations and exceptions⁴ in copyright for specific cases, such as making copies in braille for persons with disabilities when a document is not available commercially in that format. After all, if the monopolistic right over copyrighted works was unlimited, a copyright owner wielding this power in a market could impose higher fees than are warranted for such a good.

Fortunately, the copyright regime exists to correct power asymmetries, not create them — or so would claim economic theory. Unfortunately, the innocent observer of the copyright reform process over the past few decades is instead confronted with the weight given to the needs of certain parties over the needs of others when new copyright legislation is drafted.

Characters

If copyright were a real story, it would be a dramatic plot involving a love triangle. Creators (artists, authors, sculptors, programmers, visual artists, etc.) would be placed at the top with the industry (publishers⁵, music labels⁶, movie studios⁷, distributors, retail stores, etc.) and users (citizens⁸ and heritage institutions like libraries⁹, archives, museums, etc.) at the two bottom edges.

It is interesting to note that most if not all creators are a specific kind of user. Authors read, musicians listen and filmmakers watch. They are distinct inasmuch as they create new copyrighted works and they need the industry to invest in their creations in order to bring them to the market, so that users can access them. Copyright thus becomes the necessary fuel that makes this cultural machine work.

Setting

Because copyright is enshrined in legislation, the branches of the state — the government, the legislature and the courts — offer the setting in which the characters evolve. Each group of characters has specific needs with regards to balancing power asymmetries in the markets for copyrighted works.

The emergence of digital technologies and the internet has radically transformed the assumptions under which they operate. In that sense, the characters assess the current market situation and attempt to mediate their situation with key stakeholders by devising new business plans, suing each other or advocating and lobbying¹⁰ elected and government officials to change the laws. Although the industry seems to be engaged in each of these activities, the latter is the setting for recent copyright reform activities, especially ACTA.

To understand copyright reform, one should ideally focus on the international rather than the national setting. In fact, this has been the case since the late 19th century with the Berne Convention.¹¹ This international treaty was established to structure the international trade in culture. It has since been placed under the aegis of the WIPO, an agency of the United Nations. It is quite natural, then, that the content industry turned to WIPO after it unsuccessfully lobbied the U.S. government for new rules to regulate content on the internet in the mid 1990s. This resulted, in 1996, in the WIPO *Copyright Treaty*¹² and the WIPO *Performances and Phonograms Treaty*.¹³ The World Trade Organization's (WTO) *Trade-Related Aspects of Intellectual Property Rights*¹⁴ (TRIPS) also impacts users¹⁵ of copyrighted content.

These multilateral negotiations (between many states in relatively open forums) are but the backdrop of the reform process. In fact, the United States has been negotiating bilateral trade agreements which include provisions dealing specifically with copyright reform with many countries. The *North American Free Trade Agreement* (NAFTA)¹⁶ is but one example. The United States, driven by its highly lucrative and exportable content industry, has been pursuing these bilateral agreements with at least 17 countries.¹⁷ Easier access to U.S. markets is traded for more favorable intellectual property enforcement in these countries.

In that sense, understanding where Canada is going with its copyright reform really means understanding the needs of those who can afford to be present at international trade negotiations.

Intrigue

In light of these developments, the emergence of ACTA should pose little surprise. After all, how could one blame proactive multinational corporations for looking after the value of their intangible assets to the benefit of their shareholders by advocating through their respective governments at multinational or bilateral negotiations? More to the point, how could one be against an anti-counterfeiting trade agreement? The answer lies both in the content of such an agreement and in the process under which it is created.

Since 2004, representatives from Australia, Canada, the European Union, Japan, Jordan, Mexico, Morocco, New Zealand, the Republic of Korea, Singapore, Switzerland, the United Arab Emirates, and the United States have met to draft ACTA in secret. Following pressure from the public, Canada¹⁸ and other countries released a preliminary version of the treaty on April 22 2010. Although this addresses the transparency issue in part, participation in the process is shrouded in a veil of secrecy. The International Federation of Library Associations and Institutions (IFLA) released the following statement one month before the release of the draft treaty:

IFLA understands and respects the role that copyright plays in information creation and dissemination around the world. IFLA recognizes that copyright grants creators and content providers certain rights to the commercial exploitation of information and cultural expression, but also believes that these exclusive economic rights must be balanced by fair limitations and exceptions as well as access to the public domain in order to allow for a vibrant civil society. Copyright must provide for a fair and profitable balance between the needs of information users and society at large and the commercial imperatives of creators and content providers. In this spirit, IFLA is concerned that the recent non-transparent negotiations regarding the Anti-Counterfeiting Trade Agreement (ACTA) pose a threat to the balance of copyright. IFLA believes that the best forum for these discussions is the World Intellectual Property Organization (WIPO) to ensure the participation of a wide range of stakeholders in this important issue.¹⁹

Being aware something is afoot is one thing, being able to intervene to advocate for one's interests is quite another. Bringing the ACTA negotiations to WIPO would mark another step in making the process more equitable to all the characters in our story, like Canadian citizens.

With respect to its content, it is difficult to deconstruct the text of the draft treaty, but a few items seem to be permanently on the order paper. One issue aims to create new legal logic to forbid tampering with "digital locks" placed on cultural products. For example, trying to circumvent protection software or any other Technological Protection Measure (TPM) placed on a cultural product like a DVD or a music file can be made illegal, even for legitimate uses like criticism or

news reporting. This increased control on the use of cultural products is seen as a way to fight counterfeiting, but may have dire consequences if it is too broad. As well, it seems that Internet Service Providers (ISPs) are seen as a group capable of tracking and acting upon digital piracy. Economic imperatives are being touted as the reason to make ISPs the sword of rights-holder's discontent. Again, this added control may have dire consequences on civil society's use of digital technologies if not implemented correctly. There are more issues at play, but these two examples illustrate that a proper balance of interests must be present in devising new IP rules. This balance of interests is best achieved when all interested parties in an international legal instrument are present at the table. Only then can we achieve both a thriving marketplace of digital culture as well as a vibrant civil society.

With the introduction and wide appropriation of digital technologies and the internet, copyright has become a legal regime that touches the lives of anybody who has access to these tools. In a sense, the digital world has the potential to eliminate the distinction between users and creators. Now, one could wonder what really happens when a teenager records herself practicing a few cover songs to post on a video-sharing website; when a fifth grade class uses short clips from movies to create a new short film to post on the school's website; or when a graduate Fine Arts student criticizes a gallery's *Vernissage* on his blog using pictures from a cellphone. Are these people criminals or simply engaging in culture? ACTA clearly points to the former.

ACTA could impose a system where a rights-holder may have content pulled down from the internet on a mere accusation, even if the use is fair in the first place. As well, protecting digital locks may not be an effective method to ward off hackers, only a way to frustrate honest consumers.

Denouement?

The main problem with ACTA is that it runs the risk of imposing a definition of our future digital culture that is drafted by the content industry. You will be allowed to use cultural, knowledge and information products in line with a strict contract established by a major corporation and any deviation from such will place you in harm's way.

This could include being disconnected from the internet and lawsuits. Also, the digital cultural goods you will consume (forget about owning them) will be locked down by software that will, for example, forbid you from migrating your music collection to a new listening device.

Canada's legal environment offers many interesting alternatives to ACTA's goals. For example, Charlie Angus, of the New Democratic Party recently proposed²⁰ two simple reforms. Firstly, broadening the application of the private copying regime could allow for legal file sharing by introducing a new levy through the Copyright Board of Canada. As well, structuring the application of fair dealing by opening its definition while imposing constraints on its application, such as those proposed by the Supreme Court of Canada,²¹ could also ensure fair non-commercial uses of digital content. Alas, these suggestions are framed with the needs of creators and users in mind, not the commercial imperatives of the industry.

Policy makers in Canada and elsewhere need to understand that the government-granted monopoly called copyright is but partial, designed to provide some scarcity for works that are easily copied, and should be balanced against the needs of civil society and future creators. Intangible assets are not real assets and should not be protected by full property rights. ACTA would have our governments protect the content industry's business models without allowing some wiggle room for a possible shift in cultural market.

Olivier Charbonneau is an associate librarian at Concordia University. He manages a website on this topic at www.culturelibre.ca

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A World on Edge and the ‘Crisis of the Media’

Afterword

Dwayne Winseck

While a world standing on the edge of financial ruin merited a full-court press in search of at least *some* kind of lifeline to stabilize the global economy at the recent G8 and G20 meetings, there has also been another crisis unfolding – a crisis of the media – that has pundits and scribblers everywhere fretting over the ‘future of the media’ and scrambling to discover the industry’s ‘next top model’.

Many argue that the steady onslaught of the internet and declining advertising revenues have created a crisis for the media, and journalism especially. Canwest exemplifies such conditions, but worldwide, several bastions of the ‘old order’ that were assembled just before and after the turn of the 21st century have since been restructured (Bertelsmann, Cogeco), dismantled (AT&T, Vivendi), gone bankrupt (Canwest, Craig, Knight Ridder, Media News, Tribune, Kirch, TQS), or abandoned their earlier visions of convergence altogether (Bell Globemedia, Time Warner). Even the *New York Times* and France’s *Le Monde* have been forced to find new benefactors. Conditions in Canada are

unique, but the dynamics are global, and one thing in common everywhere is that a feeble press is a dangerous thing for democracy.

To be sure, there is no shortage of examples that seem to prove that the media in Canada are ‘in crisis’:

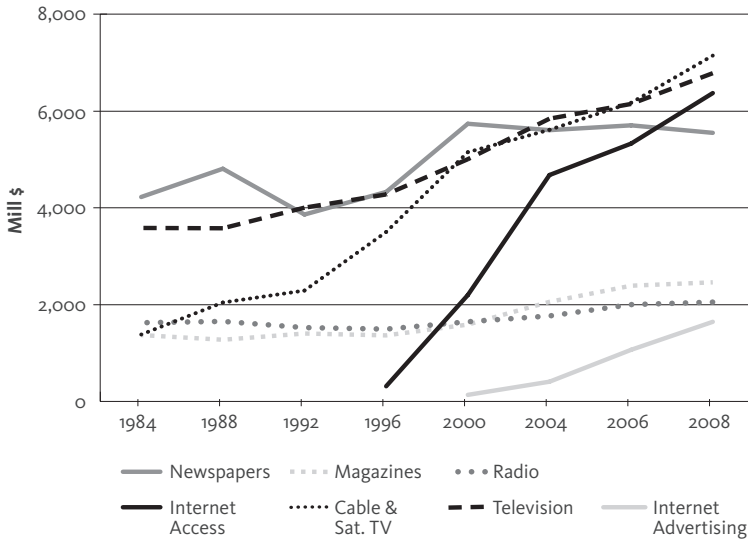
- Canwest and CTVglobemedia closed several tv stations in 2009;
- TQS, the second private French-language tv network, went bankrupt in 2008 and was sold the next year;
- Even the CBC’s advertising revenue dropped in 2007–8;
- Private conventional tv profits fell to zero in 2008;
- Several newspapers — the *National Post*, *Recorder* (Brockville), *Chatham Daily News* and the *Daily Observer* (Pembroke) — pared back their publishing schedule from six days a week to five;
- A slew of lay-offs by Rogers at CityTV in 2009/10 (140 jobs), CTVglobemedia in 2009 (248 jobs), and 1,900 positions at Canwest (2008–9).

Instead of blaming the internet for this heightened state of flux in the media, this article argues that the current woes facing *some* media outlets are mainly reflecting a *short-term*, cyclical decline in advertising revenue caused by the economic downturn and the accumulated results of two waves of consolidation that transformed the media industries between 1995–2000 and again from 2003 to 2007. The results, paradoxically, have been greater media concentration but also bloated media conglomerates that have sometimes stumbled badly and occasionally been brought to their knees by the two global financial crises of the 21st century (2000–2; 2008–).

The growing network media economy, 1984–2008

It is one thing to see the media industries as facing tumultuous times, but something else altogether to see these conditions as cataclysmic. In reality, the media industries have grown *immensely* in the past twenty-five years, as Figure 1 demonstrates.

FIGURE 1 The Growth of the Network Media Economy in Canada, 1984–2008



Adding all of the segments in Figure 1 shows that the network media economy expanded greatly from \$12.2 billion in 1984 to \$21.4 billion in 2000 and to \$32 billion in 2008.

Claims that television is in desperate straits — remember the ‘save local tv’ ad-wars? — involve a sleight of hand that typically highlights the *relative decline* of conventional advertising-supported television, where profits fell from 11% in 2005, to 5% in 2007, to zero in 2008. Over the long run, however, profits have been 10–15% for the past decade.

Moreover, the television universe has expanded immensely to include new distribution channels, cable and satellite services, pay-per-view, video-on-demand, the internet, and so on. There were 48 cable and satellite television services in 2000; today there are 189. Indeed, the television universe doubled in size between 1984 and 2000, and then grew to a \$14 billion industry in 2008.

Operating profits for specialty and pay television services as well as cable and satellite distributors like Rogers and Shaw have been a rich 21% to 25% every year since 2002 — two-and-a-half times the level of Canadian industry on average and matched only by banking (25.2%), alcohol and tobacco (23.6%), and real estate (20.9%). Television is, thus, not in crisis, but a goldmine!

Trends in the newspaper industry are better described as a continuation of long-term trends rather than a crisis. Daily newspaper circulation has been in long-term decline relative to population in the U.S., Britain and Canada since the 1950s, but circulation in Canada rose in absolute terms until 2000, when 5 million copies were sold, before falling to 4.7 million in 2005 and 4.1 million in 2009. There has been no downward spike due to the internet. Newspaper revenues have not plunged either. After following the ups and downs of the economy in the 1980s and early-1990s, revenues increased steadily to \$5.7 billion in 2000. They were \$5.5 billion by 2008. With *operating profits* between 12% and 15% between 2000 and 2008, newspaper profits have been high, not low.

Profits recently plunged *temporarily* for Astral (2009), Canwest (2008–9), Cogeco (2009), Quebecor (2007–8) and Torstar (2008), but this experience mostly — except for Canwest — coincides with the economic crisis, suggesting that economic forces, not the internet, are behind their difficulties. While clearly not all is honky-dory, the Project for Excellence in Journalism in the U.S. hit the nail on the head when it put much of the blame for the current state of the press on the industry itself for having been slow on the uptake with respect to the internet for the past decade.

Despite all the doom and gloom, media companies should be singing in the street given that ‘total media consumption time’ for more than three-quarters of us surged from 46 hours to 62 hours per week from 2004 to 2007. Canadians have always been intense media users by global standards and in this age of ‘mass self-expression’ our use of YouTube, Twitter, Facebook and Wikipedia is still well above average. These “new media activities”, as the 2008 *Canada Online* report observes, “generally *supplement* rather than *displace* traditional media use”.

Instead of innovating fast and furious to take advantage of these trends, the television industry, like the press, has mostly tried to thwart the rise of the internet as an alternative medium for television. The CBC learned this lesson the hard way when Bell throttled its attempt to use BitTorrent to distribute an episode of *Canada’s Next Great Prime Minister* in 2008. Geo-gating and content rights management technologies are also being used to stagger film and television

program releases over time and national markets so as to maintain separate revenue streams for the theatre, specialty and pay TV, DVD, regular television, and so on. Try to use Hulu — the online television venture of News Corp, NBC-Universal and Disney in the U.S., or the BBC's iPlayer. You can't. Geo-gating software explains why. Broadcasters have struck some distribution deals with Google, Apple, ISPs, and others, but these efforts have been late in coming and hedged about by demands that the CRTC require all 'new media' players to contribute to Canadian television production funds.

Media merger mania and bloated media behemoths

Perhaps the most important problems lurking in the background of many of Canada's biggest media outlets stem from the two bouts of media merger mania that took place, first, during the irrational exuberance of the dot.com years from 1996 to 2000, and again, albeit on a smaller scale, from 2003 to 2007.

Primed by the easy cash of the telecom-media-technology boom, media convergence, and a green light from the then Liberal government, media and telecom companies went on a buying spree. BCE acquired CTV and the *Globe & Mail* (\$3.4b) (2000); Quebecor bought Videotron, TVA and *Sun* newspaper chain (\$7.4b) (1998 — 2001); and Canwest purchased Western International Communication (\$800m) in 1998, followed two years later by the Hollinger newspaper chain and the *National Post* (\$3.2b). In the peak year of 2000, media acquisitions totaled \$7.1b, more than eight times greater than just five years earlier. Telecoms and internet acquisitions were worth more than ten times that sum. The capitalization levels of the largest eight publicly-traded media firms soared as a result, but collapsed soon after the dot.com bubble burst and many of the rival telecom, internet and aspiring mid-size media companies went belly-up.

Beleaguered, but not beaten, a second round of consolidation ensued between 2003 and 2007. CityTV/CHUM — long one of Canada's most innovative broadcasters — and the struggling A-Channel network that it had taken over from bankrupt Craig Media (2003) was sold, after the debt load from that latter venture and the death of CHUM's revered founder, Allan Waters (December 2005), proved too

TABLE 1 The Big 10 media firms in Canada, 2008 (mill. \$)

	Owner	Market Capital (2009)	Total Revenue	Conventional TV	Specialty & Pay TV
Shaw (Corus)	Shaw	\$8,084.2	\$3,487.6	\$0.0	\$449.0
Rogers	Rogers	19,440.1	3,238	216.4	402.4
QMI	Péladeau	1,750.7	3,284.1	309.9	57.6
Bell	Diversified	1,560.7	2,944.6	51.8	51.8
CTVgm	Thomson (40%), TPF (25%), Torstar (20%), BCE (15%)	N/A	2,288.1	932.9	806.4
Canwest	Asper	24.9	2,739.0	608.0	459.2
CBC	Public	N/A	1,590	1,023.2	169.3
Astral	Greenberg	1,780.0	779.2		456.2
Torstar	Atkinson, Thall, Hindmarsh, Campbell, Honderich	500.1	750.6		
Cogeco	Audet Family (80%), Rogers (20%)	336.1	888.0	111.3	2.0
Total \$ Industry			\$31,148.0	\$3,565.8	\$3,045.0

	Owner	Cable & Satellite Distrib.	Press	Radio	Internet Access
Shaw (Corus)	Shaw	\$2,040.5	\$0.0	\$272.0	\$726.1
Rogers	Rogers	1,500.2	184.0	240.0	695.0
QMI	Péladeau	1,079.9	1,398.6		438.1
Bell	Diversified	1,450.0			1,391.0
CTVgm	Thomson (40%), TPF (25%), Torstar (20%), BCE (15%)		388.8	160.0	
Canwest	Asper		1,495.8	176.0	
CBC	Public			397.5	
Astral	Greenberg			323.0	
Torstar	Atkinson, Thall, Hindmarsh, Campbell, Honderich		750.6		
Cogeco	Audet Family (80%), Rogers (20%)	561.5			213.2
Total \$ Industry		\$6,953.5	\$5,400.0	\$2,000.0	\$6,200.0

much for his heirs to handle. The A-Channels were bought by Bell Globemedia in 2006 but transferred to the re-branded CTVglobemedia a year later as Bell abandoned its convergence strategy and scaled back its stake in CTV and the *Globe & Mail* (from 71 to 15 percent). Rogers acquired the City TV stations. Lastly, Canwest, backed by New York investment banker Goldman Sachs, acquired Alliance Atlantis to gain possession of its stable of specialty and pay television channels (BBC Canada, HGTV, Showcase, etc.).

Once the dust settled, ten lumbering media giants were left standing, as shown in Table 1.

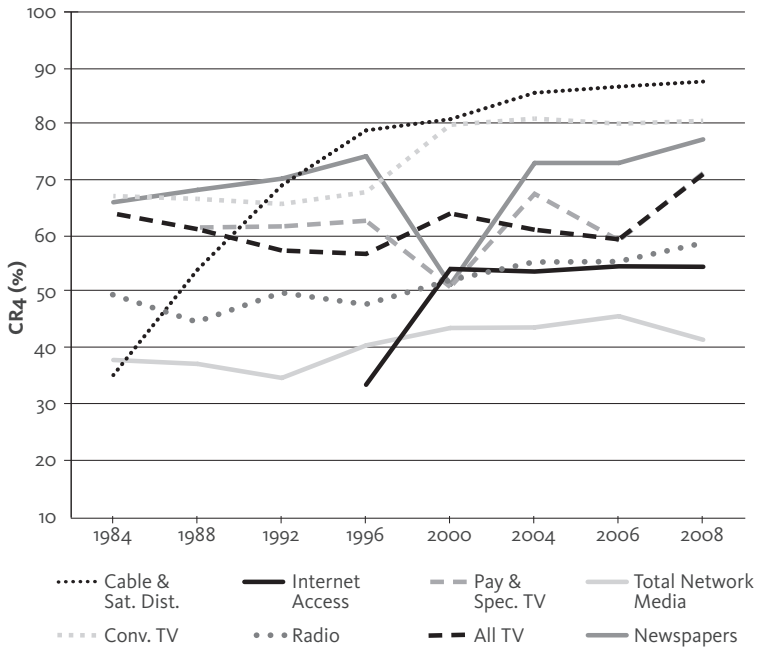
Leonard Asper, the ex-CEO and owner of Canwest, once quipped that anyone who still thinks that the media are concentrated probably believes that Elvis is still alive. Others argue that the pressing issue is not concentration, but that the fragmentation of audiences within the digital media universe is yielding a tower of babble, where bombastic voices and discord trump civil conversation and mutual understanding.

Media ownership and concentration, however, still matter greatly. For one, conditions in Canada are peculiar. All of the 'Big 10' media companies, except Bell and the CBC, are owner-controlled — a situation similar to the family oligarchies who control the media in South America and Russia versus most capitalist economies, where shareholders and expert managers are in control. Second, the media are more concentrated than ever. In fact, the 'Big 10' media outlets in Canada accounted for 71–72% of all revenues in 2000 and 2008 — a substantial rise from 61% in 1996, and further still from 54% in 1992. This is about twice as high in the U.S., based on the detailed analysis of conditions there by Columbia University Professor Eli Noam in *Media Concentration in America* (2009).

Indeed, every media sector in Canada is highly concentrated, as Figure 2 shows.

The internet is not immune to consolidation, either. Roughly 94% of Canadian high-speed internet subscribers gain access from incumbent cable and telecoms providers. Google's dominance of the search engine market is *growing*, and now accounts for 81% of searches. Facebook cuts a similar figure when it comes to social networking sites, where it accounts for nearly two-thirds of the time that Ca-

FIGURE 2 Network Media Industries Concentration in Canada (Concentration Ratios), 1984–2008



nadians spend on such sites, followed by YouTube (Google) (20%), Microsoft (1%), Twitter (1%) and MySpace (News Corp.) (1%). The concentration ratios for search and social networking sites are 97% and 86%, respectively — far in excess of acceptable norms. The time spent by internet users on the top 10 sites nearly doubled from 20 to 38 percent between 2003 and 2008, and most of the leading 15 internet news sites belonged to the traditional media companies: cbc.ca, Quebecor, CTV, *Globe & Mail*, Radio Canada, Toronto Star, Canwest and Power Corp; CNN, BBC, Reuters, MSN, Google and Yahoo! account for almost all of the rest.

Media concentration has not gone away and, furthermore, it helps to explain why Google and Facebook are such powerful forces standing midstream between “traditional” and “new” media. If media history tells us anything, it is that once the institutional structures of a new medium are locked into place they stay that way for a long time. Indeed, the structure of the ‘industrial media age’ set down in the late 19th and early 20th centuries has only begun to give way to the network

media ecology of the 21st century in the past decade — with no small amount of resistance from entrenched interests all along the line.

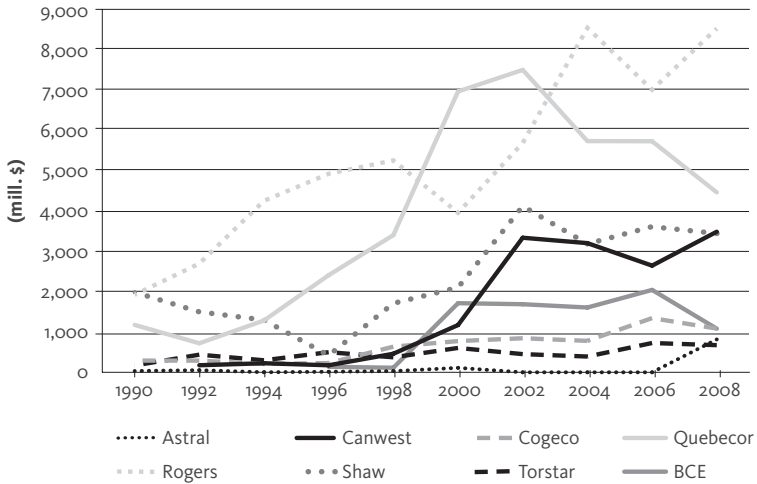
Debt, delusions and the real crisis facing the network media ecology

There is a giant, tangled paradox in all of this insofar as, while media conglomerates are larger than ever and markets more concentrated, there are signs of disarray all about us. Why? In addition to the blows delivered by two economic crises in the past decade, part of the answer lies in the irony that those caught up in media merger mania embraced a model of the digital media conglomerate and convergence just as they were losing their lustre elsewhere.

Indeed, by the turn of the 21st century, all the major telephone companies in the U.S. had pared back their tight ties with Hollywood. Microsoft wound down its stakes in cable and telecoms systems, WebTV and MSNBC. After just five years of dire experience, AT&T reversed its move into cable television in 2003, before being sold two years later. AOL Time Warner — *the* original poster child for media convergence in 2000 — shriveled to a shadow of its former self, dropping the AOL label (2003), selling Warner Music (2004), labouring under fraud charges until settling (2005), and spinning off its cable systems and AOL (2008 and 2009, respectively). By 2009, its market value was \$78 billion — roughly a third of its value in 2000. The collapse of Kirch Media in Germany, the travails of ITV in Britain, and dismantling of Vivendi in France are yet further examples of crest-fallen media conglomerates formed amidst the *fin de siècle* convergence hype.

So too in Canada have the ‘field of dreams’ visions of convergence floundered. BCE’s capitalization soared from \$15 billion in 1995 to \$89 billion in 1999, but plunged to \$26 billion three years later and its majority stake in Bell Globemedia was sold for about half its original value in 2006, then renamed CTVglobemedia. Canwest’s collapse in 2009–2010 is yet another example of consolidation gone bad. Shaw, Rogers and Quebecor continue to groan under the weight of huge debts, even though each has benefitted from the massive growth in digital television and high speed internet access and Quebecor has

FIGURE 3 Leading Media Firms and Debt, 1990–2008



enjoyed considerable success presiding over the star system in Quebec, popular programs such as *Star Academie* and newscasts that rival those of the Radio-Canada’s Réseau d’information.

The weighty debt-loads for eight out of the Big 10 media companies that are publicly-traded are indicated in the Figure below. Altogether, the total debt for these companies ballooned from \$8.8 billion in 1995 to nearly \$25 billion in 2001 — where they have stayed hanging like an albatross around the industry ever since.

Saddled with debt and bloated financial structures, these companies have been incapable of sustaining high levels of investment and innovation. Indeed, Canwest spent more annually on debt over the past decade than it did on Canadian content! At the end of the 1990s, Canada’s network media infrastructure consistently ranked at the top of ‘global league tables’. After a decade of stagnant investment, flaccid competition, and weak policies, however, as a 2010 study by Harvard University’s Berkman Centre for Internet and Society shows, this ranking has dropped to the middle or bottom-of-the-pack.

Domestic tv program production continues to fall far short of the pledges made by these companies during regulatory reviews, while the cost of U.S. programs has sky-rocketed. Overall program production in Canada has grown slightly but without coming close to keeping pace with the expansive growth in cable and satellite tv services.

With little original content of their own, broadcasters are ill-equipped to cash in on the spectacular growth of tv worldwide and vulnerable to rights holders who have no problem playing ‘traditional’ and ‘new’ media providers off one another for tv and internet distribution rights. These are additional reasons for the current woes facing *some* media firms.

A nasty media work culture has emerged, too. Throughout the past decade, Canwest riled journalists by withdrawing from the Canadian Press news service, through its ham-fisted national editorial policy, bombastic broadsides of editors and journalists by the owners, and by slashing its foreign news bureaus from eleven in 2000 to two a few years later — not exactly what we need as Canada slides ever deeper into uncharted financial waters, complex political affairs and military conflicts. The CBC, in contrast, has 14 foreign bureaus. Despite all of this flailing about, unsustainable debt finally triggered the fall of Canwest in 2009–10.

Similar forces have continuously pushed Quebecor to the brink, but without ultimately pushing it over. The *Ryerson Review of Journalism* called its efforts to slash 120 jobs at the *Toronto Sun* and to centralize its operations — a move which led Jim Jennings, the internationally-experienced editor-in-chief of the *Toronto Sun*, to resign — a “hatchet job”. Quebecor has ratcheted up conflict with its media workers to levels not previously seen in Quebec or Canada through no fewer than nine lock-outs in the past ten years. A protracted 15 month stand-off at *Le Journal de Quebec* was brought to a close only after the Quebec Commission des Relations du Travail (2008) ruled that the company’s actions were illegal. Unbowed, Quebecor locked out journalists at the *Journal de Montreal* a few weeks later, arguing that newspapers everywhere were “in a state of crisis, given that the entire world is experiencing an economic crisis and is eager to embrace change”.

Yet, far from innocents caught up in events not of their own making, Quebecor, Canwest, Cogeco, Bell Globemedia, Rogers, and Shaw were among those who took the lead in fostering the same conditions in the media industries that gave rise to the global financial crisis in general.

Concluding comments

Ultimately, the network media ecology has become larger and, by and large, remains highly profitable. There are no clear cases where specific media sectors are ‘in crisis,’ although the two global economic crises of the 21st century have dealt punishing blows to *some* media conglomerates. In fact, at the very core of the network media industries are a number of stumbling media behemoths that have been rigged to fail, if measured by their capacity to create the kind of open, digital network media system needed for the 21st century. If a ‘free media’ is essential to democracy, then surely we cannot let the fortunes of the latter hinge any more than it already does on those who have done so much to drive the current media system into the ground.

Dwayne Winseck is Professor at the School of Journalism and Communication, with a cross-appointment to the Institute of Political Economy, Carleton University, Ottawa, Canada. He has published widely in leading scholarly journals and occasionally in the popular press. His latest book (co-authored with Robert M. Pike), Communication and Empire: Media, Markets and Globalization, 1860–1930 (2007, Duke University), won the Canadian Communication Association’s G.G. Robinson Award for book-of-the-year in 2008.

Notes

All tables and graphs created by author.

* All dollar figures are expressed in ‘real dollar terms’, with 2010 as the base, and figures for tv include the CBC’s annual parliamentary appropriation.

National digital strategy MIA

Canadians have always been intense media users and, despite complaints of high prices and slow services, we've taken to the internet like ducks to water. When it comes to time spent online, Canadians are nearly double the world average. So where is our government on digital issues? Why is it taking so long for our policy and legislative framework to catch up? Sadly, Canadian digital policy is in disarray.

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ISBN 978-1-926888-63-7



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